| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01/02/2019 | 22:19:52 | | W | 05:19:52 | 05:21:02 | 22:22:45 | Earth Perihelion 0.9833012 au | | | | 69.184 | 69.222 |
| 01/05/2019 | 12:30:40 | | Sa | 19:30:40 | 19:31:50 | 12:32:23 | Venus approx. dichotomy | | | | 69.184 | 69.224 |
| 01/05/2019 | 16:34:09 | | Sa | 23:34:09 | 23:35:18 | 16:35:46 | Start Partial Solar | | -1.06 | -1.88 | 69.184 | 69.224 |
| 01/05/2019 | 18:28:11 | | Sa | 01:28:11 | 01:29:20 | 18:29:47 | New Moon (Lunation 1188) | | | | 69.184 | 69.224 |
| 01/05/2019 | 18:41:31 | | Sa | 01:41:31 | 01:42:40 | 18:43:06 | SOLAR ECLIPSE MAXIMUM 62.0% | | -23.04 | -23.23 | 69.184 | 69.224 |
| 01/05/2019 | 18:41:31 | | Sa | 01:41:31 | 01:42:40 | 18:43:06 | At 153.489E 68.721N magnitude=0.7145 | | | | 69.184 | 69.224 |
| 01/05/2019 | 18:41:31 | | Sa | 01:41:31 | 01:42:40 | 18:43:07 | PARTIAL SOLAR ECLIPSE MID-POINT | | -23.04 | -23.23 | 69.184 | 69.224 |
| 01/05/2019 | 18:41:31 | | Sa | 01:41:31 | 01:42:40 | 18:43:07 | At 153.496E 68.721N magnitude=0.7145 | | | | 69.184 | 69.224 |
| 01/05/2019 | 18:41:32 | | Sa | 01:41:32 | 01:42:42 | 18:43:08 | Lunar-Solar min. angle 1.034 deg. | | | | 69.184 | 69.224 |
| 01/05/2019 | 20:48:49 | | Sa | 03:48:49 | 03:49:58 | 20:50:22 | End Partial Solar | | -45.71 | -44.95 | 69.184 | 69.224 |
| 01/05/2019 | 21:53:39 | | Sa | 04:53:39 | 04:54:49 | 21:55:11 | Venus 24.8 arc-sec (-4.6) greatest separation -47.0 (W) | | | | 69.184 | 69.224 |
| 01/08/2019 | 21:28:36 | | Tu | 04:28:36 | 04:29:45 | 21:28:51 | Lunar apogee 406117 km | | | | 69.184 | 69.227 |
| 01/12/2019 | 01:24:00 | | Sa | 08:24:00 | 08:25:09 | 01:22:58 | Mercury Aphelion 0.4667045 au | | | | 69.184 | 69.229 |
| 01/13/2019 | 03:47:07 | | Su | 10:47:07 | 10:48:16 | 03:45:40 | Conjunction (RA) of Mercury and Saturn | | | | 69.184 | 69.230 |
| 01/13/2019 | 04:46:10 | | Su | 11:46:10 | 11:47:19 | 04:44:42 | Mercury and Saturn closest (1.72 deg.) | | | | 69.184 | 69.230 |
| 01/13/2019 | 06:31:08 | | Su | 13:31:07 | 13:32:17 | 06:29:38 | Conjunction of Mercury and Saturn | | | | 69.184 | 69.230 |
| 01/13/2019 | 23:26:22 | | Su | 06:26:22 | 06:27:31 | 23:24:36 | Lunar illum. = 50% | | | | 69.184 | 69.231 |
| 01/13/2019 | 23:45:31 | | Su | 06:45:31 | 06:46:40 | 23:43:46 | 1Q Moon | | | | 69.184 | 69.231 |
| 01/20/2019 | 19:36:39 | | Su | 02:36:39 | 02:37:48 | 19:32:39 | P1-First contact Lunar | h | -30.25 | 30.87 | 69.184 | 69.236 |
| 01/20/2019 | 20:33:34 | | Su | 03:33:34 | 03:34:43 | 20:29:34 | U1-begin umbral Lunar | P | -40.38 | 40.63 | 69.184 | 69.236 |
| 01/20/2019 | 21:40:45 | | Su | 04:40:45 | 04:41:54 | 21:36:44 | U2-begin total Lunar | T | -51.74 | 51.59 | 69.184 | 69.236 |
| 01/20/2019 | 22:12:17 | | Su | 05:12:17 | 05:13:26 | 22:08:16 | TOTAL LUNAR MID-POINT | T | -56.52 | 56.23 | 69.184 | 69.237 |
| 01/20/2019 | 22:12:18 | | Su | 05:12:18 | 05:13:27 | 22:08:17 | Lunar-Solar max. angle 179.624 deg. | | | | 69.184 | 69.237 |
| 01/20/2019 | 22:16:05 | | Su | 05:16:05 | 05:17:14 | 22:12:03 | Full Moon at 357715 km | | | | 69.184 | 69.237 |
| 01/20/2019 | 22:43:50 | | Su | 05:43:50 | 05:44:59 | 22:39:48 | U3-Totality ends | P | -60.67 | 60.28 | 69.184 | 69.237 |
| 01/20/2019 | 23:51:01 | | Su | 06:51:01 | 06:52:11 | 23:46:59 | U4-Outside umbra | h | -65.72 | 65.43 | 69.184 | 69.237 |
| 01/21/2019 | 00:47:54 | | M | 07:47:54 | 07:49:03 | 00:43:51 | P4-Last contact | | -64.19 | 64.39 | 69.184 | 69.237 |
| 01/21/2019 | 12:59:31 | | M | 19:59:31 | 20:00:41 | 12:55:20 | Lunar perigee 357342 km | | | | 69.184 | 69.237 |
| 01/21/2019 | 22:47:40 | | M | 05:47:40 | 05:48:49 | 22:43:22 | Conjunction (RA) of Venus and Jupiter | | | | 69.184 | 69.237 |
| 01/22/2019 | 05:25:56 | | Tu | 12:25:56 | 12:27:05 | 05:21:33 | Conjunction of Venus and Jupiter | | | | 69.184 | 69.238 |
| 01/22/2019 | 08:15:02 | | Tu | 15:15:02 | 15:16:11 | 08:10:37 | Venus and Jupiter closest (2.41 deg.) | | | | 69.184 | 69.238 |
| 01/27/2019 | 14:10:20 | | Su | 21:10:20 | 21:11:29 | 14:04:42 | LQ Moon | | | | 69.184 | 69.242 |
| 01/27/2019 | 14:27:51 | | Su | 21:27:51 | 21:29:00 | 14:22:13 | Lunar illum. = 50% | | | | 69.184 | 69.242 |
| 01/31/2019 | 10:35:53 | | Th | 17:35:53 | 17:37:02 | 10:29:35 | Lunar occultation of Venus op = 127.86W 15.276S | | | | 69.184 | 69.245 |
| 02/02/2019 | 00:03:48 | | Sa | 07:03:48 | 07:04:58 | 23:57:18 | Lunar occultation of Saturn op = 47.314E 21.332N | | | | 69.184 | 69.247 |
| 02/04/2019 | 13:41:56 | | M | 20:41:56 | 20:43:05 | 13:35:09 | Lunar-Solar min. angle 1.707 deg. | | | | 69.184 | 69.249 |
| 02/04/2019 | 14:03:35 | | M | 21:03:35 | 21:04:44 | 13:56:48 | New Moon (Lunation 1189) | | | | 69.184 | 69.249 |
| 02/05/2019 | 02:28:40 | | Tu | 09:28:40 | 09:29:49 | 02:21:50 | Lunar apogee 406555 km | | | | 69.184 | 69.250 |
| 02/12/2019 | 15:08:21 | | Tu | 22:08:20 | 22:09:30 | 15:01:15 | Lunar illum. = 50% | | | | 69.184 | 69.257 |
| 02/12/2019 | 15:26:14 | | Tu | 22:26:14 | 22:27:23 | 15:19:09 | 1Q Moon | | | | 69.184 | 69.257 |
| 02/18/2019 | 03:52:01 | | M | 10:52:01 | 10:53:10 | 03:45:12 | Conjunction of Venus and Saturn | | | | 69.184 | 69.263 |
| 02/18/2019 | 05:19:04 | | M | 12:19:04 | 12:20:13 | 05:12:16 | Venus and Saturn closest (1.09 deg.) | | | | 69.184 | 69.263 |
| 02/18/2019 | 06:52:59 | | M | 13:52:59 | 13:54:08 | 06:46:11 | Conjunction (RA) of Venus and Saturn | | | | 69.184 | 69.263 |
| 02/19/2019 | 02:03:05 | | Tu | 09:03:05 | 09:04:14 | 01:56:21 | Lunar perigee 356761 km | | | | 69.184 | 69.264 |
| 02/19/2019 | 08:29:50 | | Tu | 15:29:50 | 15:30:59 | 08:23:08 | Lunar-Solar max. angle 177.073 deg. | | | | 69.184 | 69.264 |
| 02/19/2019 | 08:53:35 | | Tu | 15:53:34 | 15:54:44 | 08:46:53 | Full Moon at 356843 km | | | | 69.184 | 69.264 |
| 02/25/2019 | 01:01:42 | | M | 08:01:42 | 08:02:51 | 00:55:43 | Mercury Perihelion 0.3074912 au | | | | 69.184 | 69.270 |
| 02/26/2019 | 04:27:43 | | Tu | 11:27:43 | 11:28:52 | 04:21:55 | LQ Moon | | | | 69.184 | 69.271 |
| 02/26/2019 | 04:46:17 | | Tu | 11:46:17 | 11:47:26 | 04:40:30 | Lunar illum. = 50% | | | | 69.184 | 69.271 |
| 02/26/2019 | 08:57:21 | | Tu | 15:57:21 | 15:58:30 | 08:51:35 | Mercury approx. dichotomy | | | | 69.184 | 69.271 |
| 02/26/2019 | 18:25:09 | | Tu | 01:25:09 | 01:26:18 | 18:19:27 | Mercury 7.2 arc-sec (-0.5) greatest separation 18.1 (E) | | | | 69.184 | 69.271 |
| 03/01/2019 | 11:26:24 | | F | 18:26:23 | 18:27:33 | 11:21:11 | Lunar occultation of Saturn op = 147.439W 1.745S | | | | 69.184 | 69.274 |
| 03/04/2019 | 04:26:26 | | M | 11:26:26 | 11:27:36 | 04:21:48 | Lunar apogee 406391 km | | | | 69.184 | 69.277 |
| 03/06/2019 | 08:31:38 | | W | 15:31:38 | 15:32:47 | 08:27:28 | Lunar-Solar min. angle 3.917 deg. | | | | 69.184 | 69.279 |
| 03/06/2019 | 09:03:58 | | W | 16:03:58 | 16:05:07 | 08:59:49 | New Moon (Lunation 1190) | | | | 69.184 | 69.279 |
| 03/14/2019 | 03:10:21 | * | Th | 10:10:21 | 10:11:30 | 03:08:10 | Lunar illum. = 50% | | | | 69.184 | 69.286 |
| 03/14/2019 | 03:27:05 | * | Th | 10:27:05 | 10:28:14 | 03:24:55 | 1Q Moon | | | | 69.184 | 69.286 |
| 03/19/2019 | 12:47:42 | * | Tu | 19:47:41 | 19:48:51 | 12:47:03 | Lunar perigee 359377 km | | | | 69.184 | 69.291 |
| 03/20/2019 | 14:57:45 | * | W | 21:57:45 | 21:58:54 | 14:57:26 | Solar declination = zero | | | | 69.184 | 69.293 |
| 03/20/2019 | 14:58:26 | * | W | 21:58:25 | 21:59:35 | 14:58:07 | MARCH EQUINOX declination = 0.66 arc-sec | | | | 69.184 | 69.293 |
| 03/20/2019 | 18:24:22 | * | W | 01:24:22 | 01:25:31 | 18:24:05 | Lunar-Solar max. angle 175.396 deg. | | | | 69.184 | 69.293 |
| 03/20/2019 | 18:42:52 | * | W | 01:42:51 | 01:44:01 | 18:42:36 | Full Moon at 360768 km | | | | 69.184 | 69.293 |
| 03/27/2019 | 21:09:41 | * | W | 04:09:41 | 04:10:50 | 21:11:34 | LQ Moon | | | | 69.184 | 69.299 |
| 03/27/2019 | 21:29:15 | * | W | 04:29:15 | 04:30:25 | 21:31:08 | Lunar illum. = 50% | | | | 69.184 | 69.300 |
| 03/28/2019 | 21:59:21 | * | Th | 04:59:21 | 05:00:30 | 22:01:32 | Lunar occultation of Saturn op = 30.323E 25.075S | | | | 69.184 | 69.300 |
| 03/31/2019 | 17:13:52 | * | Su | 00:13:52 | 00:15:01 | 17:16:54 | Lunar apogee 405577 km | | | | 69.184 | 69.303 |
| 04/03/2019 | 21:06:33 | * | W | 04:06:33 | 04:07:42 | 21:10:30 | Earth at 1.0 au | | | | 69.184 | 69.306 |
| 04/05/2019 | 01:42:32 | * | F | 08:42:32 | 08:43:41 | 01:46:50 | Lunar-Solar min. angle 4.957 deg. | | | | 69.184 | 69.307 |
| 04/05/2019 | 01:50:29 | * | F | 08:50:29 | 08:51:38 | 01:54:47 | New Moon (Lunation 1191) | | | | 69.184 | 69.307 |

| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 04/10/2019 | 00:39:25 | * | W | 07:39:25 | 07:40:34 | 00:45:05 | Mercury Aphelion 0.4667042 au | | | | 69.184 | 69.312 |
| 04/11/2019 | 12:41:55 | * | Th | 19:41:55 | 19:43:05 | 12:48:00 | Mercury 7.7 arc-sec (0.2) greatest separation -27.7 (W) | | | | 69.184 | 69.314 |
| 04/12/2019 | 11:50:01 | * | F | 18:50:00 | 18:51:10 | 11:56:20 | Lunar illum. = 50% | | | | 69.184 | 69.315 |
| 04/12/2019 | 12:05:53 | * | F | 19:05:53 | 19:07:02 | 12:12:13 | 1Q Moon | | | | 69.184 | 69.315 |
| 04/12/2019 | 18:26:39 | * | F | 01:26:39 | 01:27:48 | 18:33:02 | Mercury approx. dichotomy | | | | 69.184 | 69.315 |
| 04/16/2019 | 15:04:48 | * | Tu | 22:04:48 | 22:05:57 | 15:12:08 | Lunar perigee 364205 km | | | | 69.184 | 69.319 |
| 04/17/2019 | 19:25:43 | * | W | 02:25:43 | 02:26:53 | 19:33:20 | Venus Aphelion 0.7282004 au | | | | 69.184 | 69.320 |
| 04/19/2019 | 04:12:10 | * | F | 11:12:10 | 11:13:19 | 04:20:06 | Full Moon at 368584 km | | | | 69.184 | 69.321 |
| 04/19/2019 | 04:18:56 | * | F | 11:18:56 | 11:20:06 | 04:26:52 | Lunar-Solar max. angle 175.036 deg. | | | | 69.184 | 69.321 |
| 04/25/2019 | 07:29:22 | * | Th | 14:29:22 | 14:30:32 | 07:38:30 | Lunar occultation of Saturn op = 136.478W 45.625S | | | | 69.184 | 69.327 |
| 04/26/2019 | 15:18:18 | * | F | 22:18:18 | 22:19:27 | 15:27:39 | LQ Moon | | | | 69.184 | 69.328 |
| 04/26/2019 | 15:38:30 | * | F | 22:38:29 | 22:39:39 | 15:47:50 | Lunar illum. = 50% | | | | 69.184 | 69.328 |
| 04/28/2019 | 11:19:57 | * | Su | 18:19:57 | 18:21:06 | 11:29:34 | Lunar apogee 404582 km | | | | 69.184 | 69.330 |
| 05/04/2019 | 15:45:30 | * | Sa | 22:45:30 | 22:46:39 | 15:55:51 | New Moon (Lunation 1192) | | | | 69.184 | 69.334 |
| 05/04/2019 | 16:07:13 | * | Sa | 23:07:13 | 23:08:23 | 16:17:34 | Lunar-Solar min. angle 4.592 deg. | | | | 69.184 | 69.334 |
| 05/11/2019 | 17:56:52 | * | Sa | 00:56:52 | 00:58:01 | 18:07:36 | Lunar illum. = 50% | | | | 69.184 | 69.338 |
| 05/11/2019 | 18:12:14 | * | Sa | 01:12:14 | 01:13:23 | 18:22:58 | 1Q Moon | | | | 69.184 | 69.338 |
| 05/13/2019 | 14:52:49 | * | M | 21:52:49 | 21:53:59 | 15:03:35 | Lunar perigee 369009 km | | | | 69.184 | 69.340 |
| 05/18/2019 | 14:11:21 | * | Sa | 21:11:21 | 21:12:30 | 14:22:02 | Full Moon at 378793 km | | | | 69.184 | 69.342 |
| 05/18/2019 | 14:38:40 | * | Sa | 21:38:40 | 21:39:49 | 14:49:21 | Lunar-Solar max. angle 176.03 deg. | | | | 69.184 | 69.342 |
| 05/22/2019 | 15:17:06 | * | W | 22:17:06 | 22:18:16 | 15:27:33 | Lunar occultation of Saturn op = 80.515E 56.001S | | | | 69.184 | 69.345 |
| 05/24/2019 | 00:17:21 | * | F | 07:17:21 | 07:18:30 | 00:27:40 | Mercury Perihelion 0.3074942 au | | | | 69.184 | 69.345 |
| 05/26/2019 | 06:27:09 | * | Su | 13:27:09 | 13:28:18 | 06:37:15 | Lunar apogee 404138 km | | | | 69.184 | 69.347 |
| 05/26/2019 | 09:33:35 | * | Su | 16:33:35 | 16:34:44 | 09:43:40 | LQ Moon | | | | 69.184 | 69.347 |
| 05/26/2019 | 09:53:50 | * | Su | 16:53:50 | 16:54:59 | 10:03:55 | Lunar illum. = 50% | | | | 69.184 | 69.347 |
| 06/03/2019 | 03:01:57 | * | M | 10:01:57 | 10:03:06 | 03:10:57 | New Moon (Lunation 1193) | | | | 69.184 | 69.350 |
| 06/03/2019 | 03:28:53 | * | M | 10:28:53 | 10:30:03 | 03:37:54 | Lunar-Solar min. angle 3.0 deg. | | | | 69.184 | 69.350 |
| 06/07/2019 | 16:15:11 | * | F | 23:15:11 | 23:16:21 | 16:23:23 | Lunar perigee 368504 km | | | | 69.184 | 69.351 |
| 06/09/2019 | 22:44:02 | * | Su | 05:44:02 | 05:45:12 | 22:51:48 | Lunar illum. = 50% | | | | 69.184 | 69.351 |
| 06/09/2019 | 22:59:18 | * | Su | 05:59:18 | 06:00:27 | 23:07:03 | 1Q Moon | | | | 69.184 | 69.351 |
| 06/10/2019 | 08:27:48 | * | M | 15:27:48 | 15:28:57 | 08:35:29 | Jupiter at opposition - mag. -2.6 | | | | 69.184 | 69.351 |
| 06/11/2019 | 20:03:38 | * | Tu | 03:03:38 | 03:04:47 | 20:11:01 | Jupiter 46.0 arc-sec (-2.6) appears closest 4.283906au | | | | 69.184 | 69.351 |
| 06/17/2019 | 01:30:40 | * | M | 08:30:40 | 08:31:49 | 01:36:57 | Full Moon at 389563 km | | | | 69.184 | 69.352 |
| 06/17/2019 | 01:52:14 | * | M | 08:52:14 | 08:53:23 | 01:58:30 | Lunar-Solar max. angle 178.06 deg. | | | | 69.184 | 69.352 |
| 06/17/2019 | 20:01:13 | * | M | 03:01:13 | 03:02:23 | 20:07:20 | Mercury approx. dichotomy | | | | 69.184 | 69.352 |
| 06/18/2019 | 07:34:29 | * | Tu | 14:34:29 | 14:35:38 | 07:40:30 | Conjunction (RA) of Mercury and Mars | | | | 69.184 | 69.352 |
| 06/18/2019 | 09:04:24 | * | Tu | 16:04:24 | 16:05:33 | 09:10:24 | Conjunction of Mercury and Mars | | | | 69.184 | 69.352 |
| 06/18/2019 | 10:58:00 | * | Tu | 17:58:00 | 17:59:09 | 11:03:59 | Mercury and Mars closest (0.22 deg.) | | | | 69.184 | 69.352 |
| 06/18/2019 | 20:48:47 | * | Tu | 03:48:47 | 03:49:56 | 20:54:40 | Lunar occultation of Saturn op = 32.095W 50.549S | | | | 69.184 | 69.352 |
| 06/21/2019 | 08:54:15 | * | F | 15:54:14 | 15:55:24 | 08:59:36 | JUNE SOLSTICE declination = 23.4356 | | | | 69.184 | 69.352 |
| 06/23/2019 | 00:49:45 | * | Su | 07:49:45 | 07:50:54 | 00:54:45 | Lunar apogee 404548 km | | | | 69.184 | 69.353 |
| 06/23/2019 | 16:15:40 | * | Su | 23:15:40 | 23:16:49 | 16:20:31 | Mercury 8.2 arc-sec (0.4) greatest separation 25.2 (E) | | | | 69.184 | 69.353 |
| 06/25/2019 | 02:46:24 | * | Tu | 09:46:24 | 09:47:33 | 02:50:56 | LQ Moon | | | | 69.184 | 69.353 |
| 06/25/2019 | 03:06:10 | * | Tu | 10:06:10 | 10:07:19 | 03:10:43 | Lunar illum. = 50% | | | | 69.184 | 69.353 |
| 07/02/2019 | 09:55:14 | * | Tu | 16:55:14 | 16:56:23 | 09:58:18 | Start Partial Solar | | 57.37 | 57.25 | 69.184 | 69.353 |
| 07/02/2019 | 11:01:11 | * | Tu | 18:01:11 | 18:02:20 | 11:04:15 | Start Total Solar | | 66.02 | 65.32 | 69.184 | 69.353 |
| 07/02/2019 | 12:16:13 | * | Tu | 19:16:13 | 19:17:22 | 12:19:15 | New Moon (Lunation 1194) | | | | 69.184 | 69.353 |
| 07/02/2019 | 12:22:56 | * | Tu | 19:22:56 | 19:24:05 | 12:25:58 | TOTAL SOLAR ECLIPSE MID-POINT | | 68.26 | 67.26 | 69.184 | 69.353 |
| 07/02/2019 | 12:22:56 | * | Tu | 19:22:56 | 19:24:05 | 12:25:58 | At 109.005W 17.387S magnitude=1.0234 | | | | 69.184 | 69.353 |
| 07/02/2019 | 12:22:57 | * | Tu | 19:22:56 | 19:24:06 | 12:25:59 | Lunar-Solar min. angle 0.641 deg. | | | | 69.184 | 69.353 |
| 07/02/2019 | 13:44:47 | * | Tu | 20:44:46 | 20:45:56 | 13:47:49 | End Total Solar | | 59.47 | 58.97 | 69.184 | 69.353 |
| 07/02/2019 | 14:50:37 | * | Tu | 21:50:37 | 21:51:46 | 14:53:38 | End Partial Solar | | 48.80 | 48.77 | 69.184 | 69.353 |
| 07/03/2019 | 22:40:22 | * | W | 05:40:21 | 05:41:31 | 22:43:08 | Lunar occultation of Mars op = 117.648E 26.086N | | | | 69.184 | 69.353 |
| 07/04/2019 | 15:10:51 | * | Th | 22:10:50 | 22:12:00 | 15:13:30 | Earth Aphelion 1.0167543 au | | | | 69.184 | 69.353 |
| 07/04/2019 | 21:59:49 | * | Th | 04:59:49 | 05:00:58 | 22:02:25 | Lunar perigee 363726 km | | | | 69.184 | 69.353 |
| 07/06/2019 | 23:55:32 | * | Sa | 06:55:32 | 06:56:41 | 23:57:47 | Mercury Aphelion 0.4667029 au | | | | 69.184 | 69.352 |
| 07/09/2019 | 03:39:16 | * | Tu | 10:39:16 | 10:40:25 | 03:41:11 | Lunar illum. = 50% | | | | 69.184 | 69.352 |
| 07/09/2019 | 03:54:51 | * | Tu | 10:54:51 | 10:56:00 | 03:56:46 | 1Q Moon | | | | 69.184 | 69.352 |
| 07/09/2019 | 10:07:17 | * | Tu | 17:07:17 | 17:08:26 | 10:09:09 | Saturn at opposition - mag. 0.1 | | | | 69.184 | 69.352 |
| 07/09/2019 | 13:34:17 | * | Tu | 20:34:17 | 20:35:27 | 13:36:09 | Saturn 18.4 arc-sec (0.1) appears closest 9.0328au | | | | 69.184 | 69.352 |
| 07/11/2019 | 21:46:28 | * | Th | 04:46:27 | 04:47:37 | 21:47:59 | Pluto 0.1 arc-sec (14.3) appears closest 32.8213au | | | | 69.184 | 69.351 |
| 07/14/2019 | 07:51:09 | * | Su | 14:51:09 | 14:52:19 | 07:52:24 | Pluto at opposition - mag. 14.3 | | | | 69.184 | 69.351 |
| 07/16/2019 | 00:15:40 | * | Tu | 07:15:40 | 07:16:50 | 00:16:45 | Lunar occultation of Saturn op = 114.094W 36.247S | | | | 69.184 | 69.350 |
| 07/16/2019 | 11:44:07 | * | Tu | 18:44:06 | 18:45:16 | 11:45:09 | P1-First contact Lunar | | 67.03 | -68.17 | 69.184 | 69.350 |
| 07/16/2019 | 12:57:53 | * | Tu | 19:57:52 | 19:59:02 | 12:58:54 | P2-Total Penumbral Lunar | | 64.17 | -64.84 | 69.184 | 69.350 |
| 07/16/2019 | 13:01:16 | * | Tu | 20:01:16 | 20:02:25 | 13:02:18 | U1-begin umbral Lunar | | 63.83 | -64.50 | 69.184 | 69.350 |
| 07/16/2019 | 14:30:45 | * | Tu | 21:30:44 | 21:31:54 | 14:31:46 | PARTIAL LUNAR MAXIMUM 66% | | 51.32 | -52.33 | 69.184 | 69.350 |
| 07/16/2019 | 14:30:46 | * | Tu | 21:30:46 | 21:31:55 | 14:31:47 | Lunar-Solar max. angle 179.411 deg. | | | | 69.184 | 69.350 |
| 07/16/2019 | 14:38:13 | * | Tu | 21:38:13 | 21:39:22 | 14:39:14 | Full Moon at 398908 km | | | | 69.184 | 69.350 |

| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07/16/2019 | 16:00:08 | * | Tu | 23:00:08 | 23:01:17 | 16:01:09 | U4-Outside umbra | | 35.78 | -37.42 | 69.184 | 69.350 |
| 07/16/2019 | 16:03:36 | * | Tu | 23:03:36 | 23:04:45 | 16:04:37 | P3-Leaving penumbra | | 35.16 | -36.83 | 69.184 | 69.350 |
| 07/16/2019 | 17:17:24 | * | Tu | 00:17:24 | 00:18:33 | 17:18:25 | P4-Last contact | | 21.96 | -24.14 | 69.184 | 69.350 |
| 07/20/2019 | 16:58:35 | * | Sa | 23:58:35 | 23:59:44 | 16:59:19 | Lunar apogee 405481 km | | | | 69.184 | 69.350 |
| 07/24/2019 | 03:30:20 | * | W | 10:30:20 | 10:31:30 | 03:30:57 | Conjunction (RA) of Mercury and Venus | | | | 69.184 | 69.349 |
| 07/24/2019 | 17:26:08 | * | W | 00:26:07 | 00:27:17 | 17:26:44 | Conjunction of Mercury and Venus | | | | 69.184 | 69.349 |
| 07/24/2019 | 18:18:02 | * | W | 01:18:01 | 01:19:11 | 18:18:38 | LQ Moon | | | | 69.184 | 69.349 |
| 07/24/2019 | 18:36:59 | * | W | 01:36:58 | 01:38:08 | 18:37:35 | Lunar illum. = 50% | | | | 69.184 | 69.349 |
| 07/24/2019 | 19:21:22 | * | W | 02:21:22 | 02:22:31 | 19:21:58 | Mercury and Venus closest (5.6 deg.) | | | | 69.184 | 69.349 |
| 07/31/2019 | 19:54:15 | * | W | 02:54:15 | 02:55:25 | 19:55:00 | Lunar-Solar min. angle 1.88 deg. | | | | 69.184 | 69.347 |
| 07/31/2019 | 20:11:55 | * | W | 03:11:55 | 03:13:04 | 20:12:40 | New Moon (Lunation 1195) | | | | 69.184 | 69.347 |
| 08/02/2019 | 00:11:07 | * | F | 07:11:07 | 07:12:17 | 00:11:56 | Lunar perigee 359398 km | | | | 69.184 | 69.347 |
| 08/07/2019 | 10:14:37 | * | W | 17:14:37 | 17:15:46 | 10:15:57 | Lunar illum. = 50% | | | | 69.184 | 69.348 |
| 08/07/2019 | 10:30:57 | * | W | 17:30:57 | 17:32:07 | 10:32:17 | 1Q Moon | | | | 69.184 | 69.348 |
| 08/08/2019 | 02:02:35 | * | Th | 09:02:35 | 09:03:44 | 02:04:00 | Venus Perihelion 0.7184601 au | | | | 69.184 | 69.348 |
| 08/09/2019 | 16:08:00 | * | F | 23:08:00 | 23:09:10 | 16:09:38 | Mercury 7.5 arc-sec (0.0) greatest separation -19.0 (W) | | | | 69.184 | 69.348 |
| 08/12/2019 | 02:52:48 | * | M | 09:52:48 | 09:53:57 | 02:54:49 | Lunar occultation of Saturn op = 177.51E 24.908S | | | | 69.184 | 69.348 |
| 08/12/2019 | 06:57:49 | * | M | 13:57:49 | 13:58:58 | 06:59:52 | Mercury approx. dichotomy | | | | 69.184 | 69.348 |
| 08/15/2019 | 04:57:42 | * | Th | 11:57:42 | 11:58:52 | 05:00:18 | Lunar-Solar max. angle 177.025 deg. | | | | 69.184 | 69.348 |
| 08/15/2019 | 05:29:15 | * | Th | 12:29:15 | 12:30:24 | 05:31:51 | Full Moon at 404935 km | | | | 69.184 | 69.348 |
| 08/17/2019 | 03:49:20 | * | Sa | 10:49:20 | 10:50:29 | 03:52:19 | Lunar apogee 406244 km | | | | 69.184 | 69.348 |
| 08/19/2019 | 23:34:03 | * | M | 06:34:03 | 06:35:12 | 23:37:41 | Mercury Perihelion 0.3074955 au | | | | 69.184 | 69.348 |
| 08/23/2019 | 07:56:06 | * | F | 14:56:06 | 14:57:15 | 08:00:34 | LQ Moon | | | | 69.184 | 69.348 |
| 08/23/2019 | 08:14:06 | * | F | 15:14:06 | 15:15:15 | 08:18:34 | Lunar illum. = 50% | | | | 69.184 | 69.348 |
| 08/24/2019 | 05:34:13 | * | Sa | 12:34:13 | 12:35:22 | 05:38:55 | Conjunction (RA) of Venus and Mars | | | | 69.184 | 69.348 |
| 08/24/2019 | 09:53:47 | * | Sa | 16:53:47 | 16:54:56 | 09:58:33 | Venus and Mars closest (0.29 deg.) NEAR SUN | | | | 69.184 | 69.348 |
| 08/24/2019 | 10:04:31 | * | Sa | 17:04:31 | 17:05:40 | 10:09:16 | Conjunction of Venus and Mars | | | | 69.184 | 69.348 |
| 08/25/2019 | 18:14:23 | * | Su | 01:14:23 | 01:15:32 | 18:19:30 | Mars Aphelion 1.6660632 au | | | | 69.184 | 69.348 |
| 08/30/2019 | 03:12:59 | * | F | 10:12:59 | 10:14:08 | 03:19:23 | Lunar-Solar min. angle 3.929 deg. | | | | 69.184 | 69.349 |
| 08/30/2019 | 03:37:09 | * | F | 10:37:08 | 10:38:18 | 03:43:33 | New Moon (Lunation 1196) | | | | 69.184 | 69.349 |
| 08/30/2019 | 08:53:15 | * | F | 15:53:15 | 15:54:24 | 08:59:43 | Lunar perigee 357176 km | | | | 69.184 | 69.349 |
| 09/05/2019 | 19:52:56 | * | Th | 02:52:56 | 02:54:05 | 20:01:29 | Lunar illum. = 50% | | | | 69.184 | 69.352 |
| 09/05/2019 | 20:10:26 | * | Th | 03:10:26 | 03:11:35 | 20:18:59 | 1Q Moon | | | | 69.184 | 69.352 |
| 09/08/2019 | 06:41:42 | * | Su | 13:41:42 | 13:42:51 | 06:51:05 | Lunar occultation of Saturn op = 92.464E 25.149S | | | | 69.184 | 69.353 |
| 09/09/2019 | 04:08:07 | * | M | 11:08:07 | 11:09:16 | 04:17:49 | Neptune 2.4 arc-sec (7.8) appears closest 28.9276au | | | | 69.184 | 69.354 |
| 09/10/2019 | 00:24:18 | * | Tu | 07:24:18 | 07:25:27 | 00:34:17 | Neptune at opposition - mag. 7.8 | | | | 69.184 | 69.354 |
| 09/13/2019 | 06:32:26 | * | F | 13:32:26 | 13:33:35 | 06:43:34 | Lunar apogee 406377 km | | | | 69.184 | 69.356 |
| 09/13/2019 | 21:08:43 | * | F | 04:08:43 | 04:09:53 | 21:20:05 | Lunar-Solar max. angle 175.413 deg. | | | | 69.184 | 69.356 |
| 09/13/2019 | 21:32:46 | * | F | 04:32:46 | 04:33:55 | 21:44:08 | Full Moon at 406247 km | | | | 69.184 | 69.356 |
| 09/21/2019 | 19:40:54 | * | Sa | 02:40:54 | 02:42:03 | 19:55:06 | LQ Moon | | | | 69.184 | 69.361 |
| 09/21/2019 | 19:58:00 | * | Sa | 02:58:00 | 02:59:09 | 20:12:12 | Lunar illum. = 50% | | | | 69.184 | 69.361 |
| 09/23/2019 | 00:49:50 | * | M | 07:49:50 | 07:50:59 | 01:04:28 | Solar declination = zero | | | | 69.184 | 69.362 |
| 09/23/2019 | 00:50:10 | * | M | 07:50:10 | 07:51:19 | 01:04:48 | SEPTEMBER EQUINOX declination = -0.32 arc-sec | | | | 69.184 | 69.362 |
| 09/27/2019 | 19:23:47 | * | F | 02:23:47 | 02:24:56 | 19:40:04 | Lunar perigee 357802 km | | | | 69.184 | 69.364 |
| 09/28/2019 | 11:19:22 | * | Sa | 18:19:21 | 18:20:31 | 11:35:51 | Lunar-Solar min. angle 4.953 deg. | | | | 69.184 | 69.365 |
| 09/28/2019 | 11:26:22 | * | Sa | 18:26:21 | 18:27:31 | 11:42:51 | New Moon (Lunation 1197) | | | | 69.184 | 69.365 |
| 10/02/2019 | 23:12:14 | * | W | 06:12:14 | 06:13:23 | 23:30:11 | Mercury Aphelion 0.466704 au | | | | 69.184 | 69.368 |
| 10/05/2019 | 09:28:15 | * | Sa | 16:28:15 | 16:29:24 | 09:46:57 | Lunar illum. = 50% | | | | 69.184 | 69.371 |
| 10/05/2019 | 09:47:06 | * | Sa | 16:47:06 | 16:48:15 | 10:05:48 | 1Q Moon | | | | 69.184 | 69.371 |
| 10/05/2019 | 13:36:54 | * | Sa | 20:36:54 | 20:38:03 | 13:55:39 | Lunar occultation of Saturn op = 37.73W 38.683S | | | | 69.184 | 69.371 |
| 10/05/2019 | 14:52:18 | * | Sa | 21:52:18 | 21:53:28 | 15:11:04 | Earth at 1.0 au | | | | 69.184 | 69.371 |
| 10/10/2019 | 11:28:51 | * | Th | 18:28:51 | 18:30:01 | 11:49:00 | Lunar apogee 405899 km | | | | 69.184 | 69.376 |
| 10/13/2019 | 14:07:52 | * | Su | 21:07:52 | 21:09:01 | 14:28:48 | Full Moon at 402366 km | | | | 69.184 | 69.379 |
| 10/13/2019 | 14:16:26 | * | Su | 21:16:26 | 21:17:35 | 14:37:22 | Lunar-Solar max. angle 175.055 deg. | | | | 69.184 | 69.379 |
| 10/19/2019 | 21:01:46 | * | Sa | 04:01:46 | 04:02:56 | 21:24:02 | Mercury 6.7 arc-sec (-0.1) greatest separation 24.6 (E) | | | | 69.184 | 69.385 |
| 10/21/2019 | 05:39:18 | * | M | 12:39:18 | 12:40:27 | 06:01:47 | LQ Moon | | | | 69.184 | 69.386 |
| 10/21/2019 | 05:55:41 | * | M | 12:55:41 | 12:56:50 | 06:18:10 | Lunar illum. = 50% | | | | 69.184 | 69.386 |
| 10/25/2019 | 05:04:33 | * | F | 12:04:32 | 12:05:42 | 05:27:35 | Mercury approx. dichotomy | | | | 69.184 | 69.390 |
| 10/26/2019 | 03:39:07 | * | Sa | 10:39:07 | 10:40:16 | 04:02:16 | Lunar perigee 361311 km | | | | 69.184 | 69.391 |
| 10/27/2019 | 13:36:36 | * | Su | 20:36:36 | 20:37:45 | 13:59:53 | Uranus 3.7 arc-sec (5.7) appears closest 18.8329au | | | | 69.184 | 69.392 |
| 10/27/2019 | 20:38:28 | * | Su | 03:38:28 | 03:39:37 | 21:01:46 | New Moon (Lunation 1198) | | | | 69.184 | 69.392 |
| 10/27/2019 | 20:56:51 | * | Su | 03:56:51 | 03:58:00 | 21:20:10 | Lunar-Solar min. angle 4.615 deg. | | | | 69.184 | 69.393 |
| 10/28/2019 | 01:14:52 | * | M | 08:14:52 | 08:16:01 | 01:38:11 | Uranus at opposition - mag. 5.7 | | | | 69.184 | 69.393 |
| 11/02/2019 | 00:22:36 | * | Sa | 07:22:36 | 07:23:45 | 00:46:10 | Lunar occultation of Saturn op = 136.944E 61.908S | | | | 69.184 | 69.397 |
| 11/04/2019 | 03:02:58 | | M | 10:02:58 | 10:04:07 | 03:26:33 | Lunar illum. = 50% | | | | 69.184 | 69.399 |
| 11/04/2019 | 03:23:05 | | M | 10:23:04 | 10:24:14 | 03:46:39 | 1Q Moon | | | | 69.184 | 69.399 |
| 11/07/2019 | 01:36:02 | | Th | 08:36:02 | 08:37:11 | 01:59:32 | Lunar apogee 405058 km | | | | 69.184 | 69.402 |
| 11/12/2019 | 06:34:24 | | Tu | 13:34:24 | 13:35:33 | 06:57:26 | Full Moon at 393972 km | | | | 69.184 | 69.406 |
| 11/12/2019 | 07:04:48 | | Tu | 14:04:48 | 14:05:57 | 07:27:50 | Lunar-Solar max. angle 176.117 deg. | | | | 69.184 | 69.406 |

| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/15/2019 | 22:49:54 | | F | 05:49:54 | 05:51:04 | 23:12:24 | Mercury Perihelion 0.3074905 au | | | | 69.184 | 69.409 |
| 11/19/2019 | 14:10:56 | | Tu | 21:10:56 | 21:12:05 | 14:32:41 | LQ Moon | | | | 69.184 | 69.412 |
| 11/19/2019 | 14:26:52 | | Tu | 21:26:52 | 21:28:01 | 14:48:37 | Lunar illum. = 50% | | | | 69.184 | 69.412 |
| 11/23/2019 | 00:40:43 | | Sa | 07:40:43 | 07:41:52 | 01:01:37 | Lunar perigee 366716 km | | | | 69.184 | 69.415 |
| 11/24/2019 | 05:29:36 | | Su | 12:29:36 | 12:30:46 | 05:50:09 | Venus and Jupiter closest (1.41 deg.) | | | | 69.184 | 69.416 |
| 11/24/2019 | 06:33:33 | | Su | 13:33:32 | 13:34:42 | 06:54:05 | Conjunction of Venus and Jupiter | | | | 69.184 | 69.416 |
| 11/24/2019 | 07:00:28 | | Su | 14:00:28 | 14:01:37 | 07:21:00 | Conjunction (RA) of Venus and Jupiter | | | | 69.184 | 69.416 |
| 11/25/2019 | 03:32:31 | | M | 10:32:30 | 10:33:40 | 03:52:47 | Mercury approx. dichotomy | | | | 69.184 | 69.417 |
| 11/26/2019 | 08:05:35 | | Tu | 15:05:35 | 15:06:45 | 08:25:30 | New Moon (Lunation 1199) | | | | 69.184 | 69.418 |
| 11/26/2019 | 08:31:46 | | Tu | 15:31:46 | 15:32:55 | 08:51:40 | Lunar-Solar min. angle 2.946 deg. | | | | 69.184 | 69.418 |
| 11/28/2019 | 03:29:15 | | Th | 10:29:15 | 10:30:24 | 03:48:34 | Mercury 6.7 arc-sec (-0.6) greatest separation -20.1 (W) | | | | 69.184 | 69.420 |
| 11/28/2019 | 03:56:56 | | Th | 10:56:55 | 10:58:05 | 04:16:14 | Lunar occultation of Jupiter op = 42.392E 25.72N | | | | 69.184 | 69.420 |
| 11/28/2019 | 11:41:40 | | Th | 18:41:40 | 18:42:49 | 12:00:52 | Venus Aphelion 0.7282016 au | | | | 69.184 | 69.420 |
| 11/29/2019 | 14:07:15 | | F | 21:07:15 | 21:08:24 | 14:26:04 | Lunar occultation of Saturn op = 73.948E 76.494S | | | | 69.184 | 69.421 |
| 12/03/2019 | 23:37:21 | | Tu | 06:37:21 | 06:38:30 | 23:54:30 | Lunar illum. = 50% | | | | 69.184 | 69.424 |
| 12/03/2019 | 23:58:13 | | Tu | 06:58:13 | 06:59:23 | 00:15:22 | 1Q Moon | | | | 69.184 | 69.424 |
| 12/04/2019 | 21:08:14 | | W | 04:08:13 | 04:09:23 | 21:25:01 | Lunar apogee 404446 km | | | | 69.184 | 69.425 |
| 12/10/2019 | 21:41:22 | | Tu | 04:41:22 | 04:42:31 | 21:55:33 | Conjunction (RA) of Venus and Saturn | | | | 69.184 | 69.429 |
| 12/11/2019 | 02:28:59 | | W | 09:28:59 | 09:30:08 | 02:43:04 | Venus and Saturn closest (1.8 deg.) | | | | 69.184 | 69.429 |
| 12/11/2019 | 03:04:53 | | W | 10:04:52 | 10:06:02 | 03:18:57 | Conjunction of Venus and Saturn | | | | 69.184 | 69.429 |
| 12/11/2019 | 22:12:16 | | W | 05:12:16 | 05:13:25 | 22:25:59 | Full Moon at 382864 km | | | | 69.184 | 69.429 |
| 12/11/2019 | 22:30:39 | | W | 05:30:39 | 05:31:48 | 22:44:21 | Lunar-Solar max. angle 178.333 deg. | | | | 69.184 | 69.429 |
| 12/18/2019 | 13:25:14 | | W | 20:25:14 | 20:26:23 | 13:35:46 | Lunar perigee 370265 km | | | | 69.184 | 69.434 |
| 12/18/2019 | 21:57:05 | | W | 04:57:05 | 04:58:14 | 22:07:27 | LQ Moon | | | | 69.184 | 69.434 |
| 12/18/2019 | 22:12:54 | | W | 05:12:54 | 05:14:03 | 22:23:16 | Lunar illum. = 50% | | | | 69.184 | 69.434 |
| 12/21/2019 | 21:19:26 | | Sa | 04:19:25 | 04:20:35 | 21:28:19 | DECEMBER SOLSTICE declination = -23.436 | | | | 69.184 | 69.436 |
| 12/25/2019 | 19:29:51 | | W | 02:29:51 | 02:31:00 | 19:36:47 | Start Partial Solar | | -33.14 | -34.70 | 69.184 | 69.438 |
| 12/25/2019 | 20:34:34 | | W | 03:34:34 | 03:35:43 | 20:41:28 | Start Annular Solar | | -44.69 | -45.72 | 69.184 | 69.438 |
| 12/25/2019 | 22:12:49 | | W | 05:12:49 | 05:13:58 | 22:19:41 | SOLAR ECLIPSE MAXIMUM 94.3% | | -60.84 | -61.01 | 69.184 | 69.438 |
| 12/25/2019 | 22:12:49 | | W | 05:12:49 | 05:13:58 | 22:19:41 | At 100.969E 1.183N magnitude=0.9855 | | | | 69.184 | 69.438 |
| 12/25/2019 | 22:13:08 | | W | 05:13:08 | 05:14:17 | 22:20:00 | New Moon (Lunation 1200) | | | | 69.184 | 69.438 |
| 12/25/2019 | 22:17:44 | | W | 05:17:44 | 05:18:53 | 22:24:36 | ANNULAR SOLAR ECLIPSE MID-POINT | | -61.54 | -61.67 | 69.184 | 69.438 |
| 12/25/2019 | 22:17:44 | | W | 05:17:44 | 05:18:53 | 22:24:36 | At 102.255E 1.0N magnitude=0.9854 | | | | 69.184 | 69.438 |
| 12/25/2019 | 22:17:45 | | W | 05:17:45 | 05:18:54 | 22:24:37 | Lunar-Solar min. angle 0.392 deg. | | | | 69.184 | 69.438 |
| 12/26/2019 | 00:00:58 | | Th | 07:00:57 | 07:02:07 | 00:07:48 | End Annular Solar | | -69.23 | -69.28 | 69.184 | 69.438 |
| 12/26/2019 | 01:05:42 | | Th | 08:05:42 | 08:06:52 | 01:12:31 | End Partial Solar | | -64.51 | -65.38 | 69.184 | 69.438 |
| 12/28/2019 | 18:55:49 | | Sa | 01:55:49 | 01:56:59 | 19:01:17 | Lunar occultation of Venus op = 21.484W 66.977S | | | | 69.184 | 69.440 |
| 12/29/2019 | 22:27:29 | | Su | 05:27:29 | 05:28:38 | 22:32:23 | Mercury Aphelion 0.4667044 au | | | | 69.184 | 69.441 |
| 01/01/2020 | 18:30:14 | | W | 01:30:14 | 01:31:23 | 18:33:47 | Lunar apogee 404580 km | | | | 69.184 | 69.443 |
| 01/02/2020 | 08:07:39 | | Th | 15:07:38 | 15:08:48 | 08:10:55 | Mercury and Jupiter closest (1.5 deg.) NEAR SUN | | | | 69.184 | 69.444 |
| 01/02/2020 | 08:16:56 | | Th | 15:16:55 | 15:18:05 | 08:20:12 | Conjunction (RA) of Mercury and Jupiter | | | | 69.184 | 69.444 |
| 01/02/2020 | 09:41:36 | | Th | 16:41:36 | 16:42:46 | 09:44:51 | Conjunction of Mercury and Jupiter | | | | 69.184 | 69.444 |
| 01/02/2020 | 21:24:32 | | Th | 04:24:31 | 04:25:41 | 21:27:32 | Lunar illum. = 50% | | | | 69.184 | 69.444 |
| 01/02/2020 | 21:45:25 | | Th | 04:45:24 | 04:46:34 | 21:48:25 | 1Q Moon | | | | 69.184 | 69.444 |
| 01/05/2020 | 00:47:51 | | Su | 07:47:51 | 07:49:00 | 00:49:53 | Earth Perihelion 0.9832436 au | | | | 69.184 | 69.446 |
| 01/10/2020 | 10:08:01 | | F | 17:08:00 | 17:09:10 | 10:07:45 | P1-First contact Lunar | | 19.17 | -19.44 | 69.184 | 69.451 |
| 01/10/2020 | 12:10:01 | | F | 19:10:01 | 19:11:10 | 12:09:43 | PARTIAL PENUMBRAL LUNAR MID-POINT | | 23.97 | -23.82 | 69.184 | 69.451 |
| 01/10/2020 | 12:10:02 | | F | 19:10:01 | 19:11:11 | 12:09:44 | Lunar-Solar max. angle 178.945 deg. | | | | 69.184 | 69.451 |
| 01/10/2020 | 12:21:18 | | F | 19:21:18 | 19:22:28 | 12:21:00 | Full Moon at 371543 km | | | | 69.184 | 69.451 |
| 01/10/2020 | 14:12:07 | | F | 21:12:07 | 21:13:16 | 14:11:47 | P4-Last contact | | 17.47 | -17.97 | 69.184 | 69.451 |
| 01/11/2020 | 21:31:11 | | Sa | 04:31:11 | 04:32:20 | 21:30:20 | Conjunction (RA) of Mercury and Saturn | | | | 69.184 | 69.452 |
| 01/12/2020 | 02:07:38 | | Su | 09:07:38 | 09:08:47 | 02:06:42 | Mercury and Saturn closest (2.04 deg.) NEAR SUN | | | | 69.184 | 69.453 |
| 01/12/2020 | 02:51:07 | | Su | 09:51:07 | 09:52:16 | 02:50:10 | Conjunction of Mercury and Saturn | | | | 69.184 | 69.453 |
| 01/13/2020 | 13:21:04 | | M | 20:21:04 | 20:22:14 | 13:19:35 | Lunar perigee 365958 km | | | | 69.184 | 69.454 |
| 01/17/2020 | 05:58:25 | | F | 12:58:24 | 12:59:34 | 05:55:37 | LQ Moon | | | | 69.184 | 69.457 |
| 01/17/2020 | 06:14:28 | | F | 13:14:28 | 13:15:37 | 06:11:40 | Lunar illum. = 50% | | | | 69.184 | 69.457 |
| 01/22/2020 | 19:40:58 | | W | 02:40:58 | 02:42:07 | 19:36:30 | Lunar occultation of Jupiter op = 120.426E 45.558S | | | | 69.184 | 69.462 |
| 01/24/2020 | 14:16:23 | | F | 21:16:23 | 21:17:32 | 14:11:28 | Lunar-Solar min. angle 2.288 deg. | | | | 69.184 | 69.464 |
| 01/24/2020 | 14:42:00 | | F | 21:41:59 | 21:43:09 | 14:37:04 | New Moon (Lunation 1201) | | | | 69.184 | 69.464 |
| 01/29/2020 | 14:27:07 | | W | 21:27:07 | 21:28:16 | 14:21:09 | Lunar apogee 405393 km | | | | 69.184 | 69.469 |
| 02/01/2020 | 18:21:31 | | Sa | 01:21:31 | 01:22:40 | 18:15:04 | Lunar illum. = 50% | | | | 69.184 | 69.471 |
| 02/01/2020 | 18:41:40 | | Sa | 01:41:40 | 01:42:50 | 18:35:13 | 1Q Moon | | | | 69.184 | 69.471 |
| 02/09/2020 | 00:07:31 | | Su | 07:07:31 | 07:08:40 | 00:00:28 | Lunar-Solar max. angle 176.541 deg. | | | | 69.184 | 69.478 |
| 02/09/2020 | 00:33:17 | | Su | 07:33:17 | 07:34:26 | 00:26:14 | Full Moon at 362477 km | | | | 69.184 | 69.478 |
| 02/10/2020 | 06:55:57 | | M | 13:55:57 | 13:57:06 | 06:48:53 | Mercury 7.1 arc-sec (-0.6) greatest separation 18.2 (E) | | | | 69.184 | 69.479 |
| 02/10/2020 | 13:27:54 | | M | 20:27:54 | 20:29:04 | 13:20:50 | Lunar perigee 360461 km | | | | 69.184 | 69.479 |
| 02/10/2020 | 17:04:40 | | M | 00:04:40 | 00:05:49 | 16:57:35 | Mercury approx. dichotomy | | | | 69.184 | 69.479 |
| 02/11/2020 | 22:05:12 | | Tu | 05:05:12 | 05:06:21 | 21:58:07 | Mercury Perihelion 0.3074902 au | | | | 69.184 | 69.480 |
| 02/15/2020 | 15:17:13 | | Sa | 22:17:12 | 22:18:22 | 15:10:14 | LQ Moon | | | | 69.184 | 69.483 |

| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 02/15/2020 | 15:33:50 | | Sa | 22:33:49 | 22:34:59 | 15:26:51 | Lunar illum. = 50% | | | | 69.184 | 69.483 |
| 02/18/2020 | 06:24:27 | | Tu | 13:24:27 | 13:25:36 | 06:17:38 | Lunar occultation of Mars op = 73.215W 29.422N | | | | 69.184 | 69.486 |
| 02/19/2020 | 12:40:09 | | W | 19:40:08 | 19:41:18 | 12:33:27 | Lunar occultation of Jupiter op = 18.874E 66.577S | | | | 69.184 | 69.487 |
| 02/23/2020 | 08:03:04 | | Su | 15:03:04 | 15:04:13 | 07:56:48 | Lunar-Solar min. angle 4.276 deg. | | | | 69.184 | 69.490 |
| 02/23/2020 | 08:32:01 | | Su | 15:32:00 | 15:33:10 | 08:25:45 | New Moon (Lunation 1202) | | | | 69.184 | 69.490 |
| 02/26/2020 | 04:34:17 | | W | 11:34:17 | 11:35:26 | 04:28:27 | Lunar apogee 406278 km | | | | 69.184 | 69.493 |
| 03/02/2020 | 12:38:28 | | M | 19:38:28 | 19:39:37 | 12:33:37 | Lunar illum. = 50% | | | | 69.184 | 69.498 |
| 03/02/2020 | 12:57:23 | | M | 19:57:23 | 19:58:32 | 12:52:33 | 1Q Moon | | | | 69.184 | 69.498 |
| 03/09/2020 | 10:35:21 | * | M | 17:35:20 | 17:36:30 | 10:32:07 | Lunar-Solar max. angle 175.169 deg. | | | | 69.184 | 69.507 |
| 03/09/2020 | 10:47:45 | * | M | 17:47:44 | 17:48:54 | 10:44:31 | Full Moon at 357400 km | | | | 69.184 | 69.507 |
| 03/09/2020 | 23:29:52 | * | M | 06:29:52 | 06:31:01 | 23:26:47 | Lunar perigee 357122 km | | | | 69.184 | 69.508 |
| 03/16/2020 | 02:34:12 | * | M | 09:34:11 | 09:35:21 | 02:32:48 | LQ Moon | | | | 69.184 | 69.516 |
| 03/16/2020 | 02:51:38 | * | M | 09:51:38 | 09:52:48 | 02:50:15 | Lunar illum. = 50% | | | | 69.184 | 69.516 |
| 03/18/2020 | 01:24:37 | * | W | 08:24:37 | 08:25:47 | 01:23:47 | Lunar occultation of Mars op = 3.017E 75.013S | | | | 69.184 | 69.518 |
| 03/19/2020 | 19:09:01 | * | Th | 02:09:01 | 02:10:10 | 19:08:41 | Venus Perihelion 0.7184485 au | | | | 69.184 | 69.521 |
| 03/19/2020 | 20:49:37 | * | Th | 03:49:36 | 03:50:46 | 20:49:18 | MARCH EQUINOX declination = -0.03 arc-sec | | | | 69.184 | 69.521 |
| 03/19/2020 | 20:49:38 | * | Th | 03:49:38 | 03:50:48 | 20:49:20 | Solar declination = zero | | | | 69.184 | 69.521 |
| 03/19/2020 | 23:22:21 | * | Th | 06:22:21 | 06:23:30 | 23:22:04 | Conjunction (RA) of Mars and Jupiter | | | | 69.184 | 69.521 |
| 03/20/2020 | 03:37:42 | * | F | 10:37:41 | 10:38:51 | 03:37:28 | Mars and Jupiter closest (0.71 deg.) | | | | 69.184 | 69.521 |
| 03/20/2020 | 04:34:55 | * | F | 11:34:55 | 11:36:04 | 04:34:42 | Conjunction of Mars and Jupiter | | | | 69.184 | 69.521 |
| 03/22/2020 | 04:19:18 | * | Su | 11:19:18 | 11:20:28 | 04:19:41 | Mercury approx. dichotomy | | | | 69.184 | 69.524 |
| 03/23/2020 | 19:06:22 | * | M | 02:06:22 | 02:07:31 | 19:07:14 | Mercury 7.4 arc-sec (0.2) greatest separation -27.8 (W) | | | | 69.184 | 69.526 |
| 03/24/2020 | 02:28:13 | * | Tu | 09:28:13 | 09:29:22 | 02:29:10 | New Moon (Lunation 1203) | | | | 69.184 | 69.526 |
| 03/24/2020 | 02:28:47 | * | Tu | 09:28:47 | 09:29:57 | 02:29:45 | Lunar-Solar min. angle 4.984 deg. | | | | 69.184 | 69.526 |
| 03/24/2020 | 08:22:59 | * | Tu | 15:22:59 | 15:24:08 | 08:24:01 | Lunar apogee 406692 km | | | | 69.184 | 69.527 |
| 03/24/2020 | 15:13:36 | * | Tu | 22:13:35 | 22:14:45 | 15:14:42 | Venus 23.5 arc-sec (-4.5) greatest separation 46.1 (E) | | | | 69.184 | 69.527 |
| 03/26/2020 | 18:00:42 | * | Th | 01:00:42 | 01:01:51 | 18:02:27 | Venus approx. dichotomy | | | | 69.184 | 69.530 |
| 03/26/2020 | 21:42:32 | * | Th | 04:42:32 | 04:43:41 | 21:44:20 | Mercury Aphelion 0.4667039 au | | | | 69.184 | 69.530 |
| 03/31/2020 | 03:58:26 | * | Tu | 10:58:25 | 10:59:35 | 04:01:30 | Conjunction (RA) of Mars and Saturn | | | | 69.184 | 69.536 |
| 03/31/2020 | 10:31:01 | * | Tu | 17:31:01 | 17:32:10 | 10:34:10 | Mars and Saturn closest (0.91 deg.) | | | | 69.184 | 69.536 |
| 03/31/2020 | 11:31:25 | * | Tu | 18:31:25 | 18:32:35 | 11:34:35 | Conjunction of Mars and Saturn | | | | 69.184 | 69.536 |
| 04/01/2020 | 03:03:42 | * | W | 10:03:42 | 10:04:51 | 03:07:04 | Lunar illum. = 50% | | | | 69.184 | 69.537 |
| 04/01/2020 | 03:21:15 | * | W | 10:21:15 | 10:22:25 | 03:24:37 | 1Q Moon | | | | 69.184 | 69.537 |
| 04/03/2020 | 06:40:37 | * | F | 13:40:37 | 13:41:47 | 06:44:37 | Earth at 1.0 au | | | | 69.184 | 69.539 |
| 04/07/2020 | 11:08:40 | * | Tu | 18:08:40 | 18:09:49 | 11:13:51 | Lunar perigee 356907 km | | | | 69.184 | 69.543 |
| 04/07/2020 | 19:35:05 | * | Tu | 02:35:05 | 02:36:14 | 19:40:22 | Full Moon at 357030 km | | | | 69.184 | 69.543 |
| 04/07/2020 | 19:48:07 | * | Tu | 02:48:07 | 02:49:17 | 19:53:25 | Lunar-Solar max. angle 175.19 deg. | | | | 69.184 | 69.543 |
| 04/14/2020 | 15:56:09 | * | Tu | 22:56:08 | 22:57:18 | 16:03:13 | LQ Moon | | | | 69.184 | 69.550 |
| 04/14/2020 | 16:14:33 | * | Tu | 23:14:32 | 23:15:42 | 16:21:37 | Lunar illum. = 50% | | | | 69.184 | 69.550 |
| 04/20/2020 | 12:00:13 | * | M | 19:00:12 | 19:01:22 | 12:08:35 | Lunar apogee 406462 km | | | | 69.184 | 69.555 |
| 04/22/2020 | 19:25:51 | * | W | 02:25:51 | 02:27:00 | 19:34:40 | New Moon (Lunation 1204) | | | | 69.184 | 69.557 |
| 04/22/2020 | 19:55:04 | * | W | 02:55:03 | 02:56:13 | 20:03:52 | Lunar-Solar min. angle 4.258 deg. | | | | 69.184 | 69.557 |
| 04/30/2020 | 13:21:59 | * | Th | 20:21:59 | 20:23:08 | 13:31:59 | Lunar illum. = 50% | | | | 69.184 | 69.565 |
| 04/30/2020 | 13:38:21 | * | Th | 20:38:21 | 20:39:31 | 13:48:21 | 1Q Moon | | | | 69.184 | 69.565 |
| 05/05/2020 | 20:02:44 | * | Tu | 03:02:44 | 03:03:53 | 20:13:14 | Lunar perigee 359654 km | | | | 69.184 | 69.569 |
| 05/07/2020 | 03:45:14 | * | Th | 10:45:13 | 10:46:23 | 03:55:49 | Full Moon at 361183 km | | | | 69.184 | 69.570 |
| 05/07/2020 | 04:10:38 | * | Th | 11:10:37 | 11:11:47 | 04:21:13 | Lunar-Solar max. angle 176.53 deg. | | | | 69.184 | 69.570 |
| 05/09/2020 | 21:20:18 | * | Sa | 04:20:18 | 04:21:27 | 21:31:01 | Mercury Perihelion 0.3074918 au | | | | 69.184 | 69.572 |
| 05/14/2020 | 07:02:43 | * | Th | 14:02:42 | 14:03:52 | 07:13:29 | LQ Moon | | | | 69.184 | 69.576 |
| 05/14/2020 | 07:22:00 | * | Th | 14:21:59 | 14:23:09 | 07:32:46 | Lunar illum. = 50% | | | | 69.184 | 69.576 |
| 05/18/2020 | 00:44:33 | * | M | 07:44:33 | 07:45:42 | 00:55:14 | Lunar apogee 405583 km | | | | 69.184 | 69.579 |
| 05/22/2020 | 00:54:02 | * | F | 07:54:02 | 07:55:12 | 01:04:28 | Conjunction (RA) of Mercury and Venus | | | | 69.184 | 69.582 |
| 05/22/2020 | 01:41:11 | * | F | 08:41:11 | 08:42:21 | 01:51:37 | Conjunction of Mercury and Venus | | | | 69.184 | 69.582 |
| 05/22/2020 | 02:43:26 | * | F | 09:43:26 | 09:44:35 | 02:53:51 | Mercury and Venus closest (0.88 deg.) | | | | 69.184 | 69.582 |
| 05/22/2020 | 10:38:52 | * | F | 17:38:51 | 17:40:01 | 10:49:15 | New Moon (Lunation 1205) | | | | 69.184 | 69.583 |
| 05/22/2020 | 11:05:18 | * | F | 18:05:17 | 18:06:27 | 11:15:41 | Lunar-Solar min. angle 2.375 deg. | | | | 69.184 | 69.583 |
| 05/29/2020 | 09:53:46 | * | F | 16:53:45 | 16:54:55 | 10:03:22 | Mercury approx. dichotomy | | | | 69.184 | 69.588 |
| 05/29/2020 | 20:14:22 | * | F | 03:14:21 | 03:15:31 | 20:23:55 | Lunar illum. = 50% | | | | 69.184 | 69.589 |
| 05/29/2020 | 20:29:55 | * | F | 03:29:54 | 03:31:04 | 20:39:28 | 1Q Moon | | | | 69.184 | 69.589 |
| 06/02/2020 | 20:38:32 | * | Tu | 03:38:32 | 03:39:41 | 20:47:28 | Lunar perigee 364366 km | | | | 69.184 | 69.591 |
| 06/04/2020 | 06:07:03 | * | Th | 13:07:03 | 13:08:12 | 06:15:45 | Mercury 8.2 arc-sec (0.4) greatest separation 23.6 (E) | | | | 69.184 | 69.592 |
| 06/05/2020 | 10:46:09 | * | F | 17:46:08 | 17:47:18 | 10:54:38 | P1-First contact Lunar | | 64.70 | -64.20 | 69.184 | 69.592 |
| 06/05/2020 | 12:12:23 | * | F | 19:12:23 | 19:13:33 | 12:20:52 | Full Moon at 369005 km | | | | 69.184 | 69.592 |
| 06/05/2020 | 12:25:04 | * | F | 19:25:04 | 19:26:14 | 12:33:33 | PARTIAL PENUMBRAL LUNAR MID-POINT | | 67.49 | -66.79 | 69.184 | 69.592 |
| 06/05/2020 | 12:25:05 | * | F | 19:25:05 | 19:26:14 | 12:33:34 | Lunar-Solar max. angle 178.771 deg. | | | | 69.184 | 69.592 |
| 06/05/2020 | 14:03:51 | * | F | 21:03:50 | 21:05:00 | 14:12:18 | P4-Last contact | | 55.45 | -56.04 | 69.184 | 69.592 |
| 06/12/2020 | 23:23:41 | * | F | 06:23:41 | 06:24:50 | 23:30:41 | LQ Moon | | | | 69.184 | 69.595 |
| 06/12/2020 | 23:43:36 | * | F | 06:43:35 | 06:44:45 | 23:50:36 | Lunar illum. = 50% | | | | 69.184 | 69.596 |
| 06/14/2020 | 17:56:37 | * | Su | 00:56:37 | 00:57:47 | 18:03:15 | Lunar apogee 404595 km | | | | 69.184 | 69.596 |

| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 06/19/2020 | 01:31:58 | * | F | 08:31:57 | 08:33:07 | 01:37:39 | Lunar occultation of Venus op = 1.254W 65.846N | | | | 69.184 | 69.598 |
| 06/20/2020 | 14:43:40 | * | Sa | 21:43:40 | 21:44:50 | 14:49:01 | JUNE SOLSTICE declination = 23.4365 | | | | 69.184 | 69.599 |
| 06/20/2020 | 20:46:01 | * | Sa | 03:46:00 | 03:47:10 | 20:51:18 | Start Partial Solar | | -9.94 | -11.66 | 69.184 | 69.599 |
| 06/20/2020 | 21:47:46 | * | Sa | 04:47:46 | 04:48:56 | 21:53:04 | Start Annular Solar | | -16.54 | -17.79 | 69.184 | 69.599 |
| 06/20/2020 | 23:40:05 | * | Sa | 06:40:05 | 06:41:14 | 23:45:21 | ANNULAR SOLAR ECLIPSE MID-POINT | | -22.43 | -23.19 | 69.184 | 69.599 |
| 06/20/2020 | 23:40:05 | * | Sa | 06:40:05 | 06:41:14 | 23:45:21 | At 79.67E 30.514N magnitude=0.9974 | | | | 69.184 | 69.599 |
| 06/20/2020 | 23:40:06 | * | Sa | 06:40:06 | 06:41:15 | 23:45:22 | Lunar-Solar min. angle 0.114 deg. | | | | 69.184 | 69.599 |
| 06/20/2020 | 23:41:28 | * | Sa | 06:41:27 | 06:42:37 | 23:46:44 | New Moon (Lunation 1206) | | | | 69.184 | 69.599 |
| 06/20/2020 | 23:45:24 | * | Sa | 06:45:23 | 06:46:33 | 23:50:40 | SOLAR ECLIPSE MAXIMUM 99.0% | | -22.48 | -23.24 | 69.184 | 69.599 |
| 06/20/2020 | 23:45:24 | * | Sa | 06:45:23 | 06:46:33 | 23:50:40 | At 81.47E 30.763N magnitude=0.9974 | | | | 69.184 | 69.599 |
| 06/21/2020 | 01:32:20 | * | Su | 08:32:19 | 08:33:29 | 01:37:35 | End Annular Solar | | -18.92 | -19.91 | 69.184 | 69.599 |
| 06/21/2020 | 02:34:03 | * | Su | 09:34:03 | 09:35:12 | 02:39:18 | End Partial Solar | | -13.33 | -14.69 | 69.184 | 69.599 |
| 06/22/2020 | 20:58:03 | * | M | 03:58:02 | 03:59:12 | 21:02:54 | Mercury Aphelion 0.4667026 au | | | | 69.184 | 69.600 |
| 06/28/2020 | 01:00:31 | * | Su | 08:00:30 | 08:01:40 | 01:04:17 | Lunar illum. = 50% | | | | 69.184 | 69.602 |
| 06/28/2020 | 01:15:41 | * | Su | 08:15:41 | 08:16:51 | 01:19:27 | 1Q Moon | | | | 69.184 | 69.602 |
| 06/29/2020 | 19:12:47 | * | M | 02:12:46 | 02:13:56 | 19:16:12 | Lunar perigee 368958 km | | | | 69.184 | 69.603 |
| 07/04/2020 | 04:34:42 | * | Sa | 11:34:42 | 11:35:52 | 04:37:18 | Earth Aphelion 1.0166943 au | | | | 70.184 | 69.604 |
| 07/04/2020 | 20:07:47 | * | Sa | 03:07:48 | 03:08:58 | 20:10:17 | P1-First contact Lunar | h | -5.04 | 3.66 | 70.184 | 69.604 |
| 07/04/2020 | 21:30:01 | * | Sa | 04:30:01 | 04:31:11 | 21:32:30 | PARTIAL PENUMBRAL LUNAR MID-POINT | h | -15.19 | 13.08 | 70.184 | 69.604 |
| 07/04/2020 | 21:30:02 | * | Sa | 04:30:02 | 04:31:12 | 21:32:31 | Lunar-Solar max. angle 178.685 deg. | | | | 70.184 | 69.604 |
| 07/04/2020 | 21:44:24 | * | Sa | 04:44:24 | 04:45:34 | 21:46:53 | Full Moon at 379149 km | | | | 70.184 | 69.604 |
| 07/04/2020 | 22:52:00 | * | Sa | 05:52:00 | 05:53:10 | 22:54:28 | P4-Last contact | | -21.55 | 19.22 | 70.184 | 69.604 |
| 07/10/2020 | 07:43:46 | * | F | 14:43:47 | 14:44:56 | 07:45:26 | Venus Aphelion 0.7282336 au | | | | 70.184 | 69.605 |
| 07/12/2020 | 12:26:32 | * | Su | 19:26:33 | 19:27:42 | 12:27:55 | Lunar apogee 404199 km | | | | 70.184 | 69.606 |
| 07/12/2020 | 16:28:59 | * | Su | 23:29:00 | 23:30:10 | 16:30:21 | LQ Moon | | | | 70.184 | 69.606 |
| 07/12/2020 | 16:49:08 | * | Su | 23:49:09 | 23:50:18 | 16:50:30 | Lunar illum. = 50% | | | | 70.184 | 69.606 |
| 07/13/2020 | 01:53:57 | * | M | 08:53:57 | 08:55:07 | 01:55:16 | Pluto 0.1 arc-sec (14.3) appears closest 33.0627au | | | | 70.184 | 69.606 |
| 07/14/2020 | 00:58:32 | * | Tu | 07:58:32 | 07:59:42 | 00:59:44 | Jupiter at opposition - mag. -2.8 | | | | 70.184 | 69.606 |
| 07/15/2020 | 02:56:53 | * | W | 09:56:53 | 09:58:03 | 02:57:59 | Jupiter 47.6 arc-sec (-2.8) appears closest 4.139329au | | | | 70.184 | 69.606 |
| 07/15/2020 | 12:12:28 | * | W | 19:12:28 | 19:13:38 | 12:13:31 | Pluto at opposition - mag. 14.3 | | | | 70.184 | 69.606 |
| 07/20/2020 | 10:08:20 | * | M | 17:08:21 | 17:09:30 | 10:09:03 | Lunar-Solar min. angle 2.56 deg. | | | | 70.184 | 69.608 |
| 07/20/2020 | 10:32:56 | * | M | 17:32:57 | 17:34:07 | 10:33:39 | New Moon (Lunation 1207) | | | | 70.184 | 69.608 |
| 07/20/2020 | 15:27:48 | * | M | 22:27:49 | 22:28:58 | 15:28:30 | Saturn at opposition - mag. 0.1 | | | | 70.184 | 69.608 |
| 07/20/2020 | 19:37:36 | * | M | 02:37:36 | 02:38:46 | 19:38:17 | Saturn 18.5 arc-sec (0.1) appears closest 8.99471au | | | | 70.184 | 69.608 |
| 07/22/2020 | 08:12:09 | * | W | 15:12:10 | 15:13:19 | 08:12:47 | Mercury 7.8 arc-sec (0.2) greatest separation -20.1 (W) | | | | 70.184 | 69.608 |
| 07/24/2020 | 22:01:47 | * | F | 05:01:47 | 05:02:57 | 22:02:22 | Lunar perigee 368361 km | | | | 70.184 | 69.609 |
| 07/26/2020 | 02:22:43 | * | Su | 09:22:44 | 09:23:53 | 02:23:18 | Mercury approx. dichotomy | | | | 70.184 | 69.609 |
| 07/27/2020 | 05:17:17 | * | M | 12:17:18 | 12:18:28 | 05:17:53 | Lunar illum. = 50% | | | | 70.184 | 69.609 |
| 07/27/2020 | 05:32:33 | * | M | 12:32:33 | 12:33:43 | 05:33:08 | 1Q Moon | | | | 70.184 | 69.609 |
| 08/03/2020 | 02:02:58 | * | M | 09:02:58 | 09:04:08 | 02:03:55 | Mars Perihelion 1.3813793 au | | | | 70.184 | 69.611 |
| 08/03/2020 | 08:28:38 | * | M | 15:28:38 | 15:29:48 | 08:29:37 | Lunar-Solar max. angle 176.479 deg. | | | | 70.184 | 69.611 |
| 08/03/2020 | 08:58:45 | * | M | 15:58:46 | 15:59:55 | 08:59:44 | Full Moon at 389877 km | | | | 70.184 | 69.611 |
| 08/05/2020 | 20:37:06 | * | W | 03:37:06 | 03:38:16 | 20:38:20 | Mercury Perihelion 0.3074983 au | | | | 70.184 | 69.612 |
| 08/09/2020 | 01:38:34 | * | Su | 08:38:34 | 08:39:44 | 01:40:14 | Lunar occultation of Mars op = 42.385W 40.29S | | | | 70.184 | 69.613 |
| 08/09/2020 | 06:50:05 | * | Su | 13:50:06 | 13:51:15 | 06:51:47 | Lunar apogee 404659 km | | | | 70.184 | 69.613 |
| 08/11/2020 | 09:44:46 | * | Tu | 16:44:47 | 16:45:57 | 09:46:49 | LQ Moon | | | | 70.184 | 69.614 |
| 08/11/2020 | 10:04:40 | * | Tu | 17:04:41 | 17:05:51 | 10:06:43 | Lunar illum. = 50% | | | | 70.184 | 69.614 |
| 08/12/2020 | 14:02:14 | * | W | 21:02:15 | 21:03:24 | 14:04:29 | Venus approx. dichotomy | | | | 70.184 | 69.615 |
| 08/12/2020 | 17:14:08 | * | W | 00:14:08 | 00:15:18 | 17:16:24 | Venus 23.6 arc-sec (-4.4) greatest separation -45.8 (W) | | | | 70.184 | 69.615 |
| 08/18/2020 | 19:19:02 | * | Tu | 02:19:02 | 02:20:12 | 19:22:33 | Lunar-Solar min. angle 4.35 deg. | | | | 70.184 | 69.617 |
| 08/18/2020 | 19:41:39 | * | Tu | 02:41:39 | 02:42:49 | 19:45:10 | New Moon (Lunation 1208) | | | | 70.184 | 69.617 |
| 08/21/2020 | 03:57:03 | * | F | 10:57:04 | 10:58:14 | 04:01:09 | Lunar perigee 363513 km | | | | 70.184 | 69.618 |
| 08/25/2020 | 10:41:51 | * | Tu | 17:41:52 | 17:43:01 | 10:47:05 | Lunar illum. = 50% | | | | 70.184 | 69.620 |
| 08/25/2020 | 10:57:37 | * | Tu | 17:57:38 | 17:58:47 | 11:02:51 | 1Q Moon | | | | 70.184 | 69.620 |
| 09/01/2020 | 22:05:58 | * | Tu | 05:05:59 | 05:07:08 | 22:13:29 | Lunar-Solar max. angle 175.183 deg. | | | | 70.184 | 69.623 |
| 09/01/2020 | 22:22:04 | * | Tu | 05:22:04 | 05:23:14 | 22:29:34 | Full Moon at 399203 km | | | | 70.184 | 69.623 |
| 09/05/2020 | 21:44:49 | * | Sa | 04:44:49 | 04:45:59 | 21:53:39 | Lunar occultation of Mars op = 29.988W 8.284N | | | | 70.184 | 69.625 |
| 09/05/2020 | 23:28:56 | * | Sa | 06:28:56 | 06:30:06 | 23:37:48 | Lunar apogee 405607 km | | | | 70.184 | 69.625 |
| 09/10/2020 | 02:25:43 | * | Th | 09:25:43 | 09:26:53 | 02:36:00 | LQ Moon | | | | 70.184 | 69.628 |
| 09/10/2020 | 02:44:55 | * | Th | 09:44:56 | 09:46:05 | 02:55:13 | Lunar illum. = 50% | | | | 70.184 | 69.628 |
| 09/10/2020 | 17:50:21 | * | Th | 00:50:21 | 00:51:31 | 18:00:52 | Neptune 2.4 arc-sec (7.8) appears closest 28.9223au | | | | 70.184 | 69.628 |
| 09/11/2020 | 13:26:15 | * | F | 20:26:15 | 20:27:25 | 13:37:03 | Neptune at opposition - mag. 7.8 | | | | 70.184 | 69.628 |
| 09/17/2020 | 04:00:12 | * | Th | 11:00:12 | 11:01:22 | 04:13:00 | New Moon (Lunation 1209) | | | | 70.184 | 69.632 |
| 09/17/2020 | 04:00:36 | * | Th | 11:00:37 | 11:01:47 | 04:13:24 | Lunar-Solar min. angle 5.003 deg. | | | | 70.184 | 69.632 |
| 09/18/2020 | 06:48:01 | * | F | 13:48:01 | 13:49:11 | 07:01:13 | Lunar perigee 359082 km | | | | 70.184 | 69.632 |
| 09/18/2020 | 20:15:00 | * | F | 03:15:01 | 03:16:11 | 20:28:24 | Mercury Aphelion 0.4666995 au | | | | 70.184 | 69.633 |
| 09/22/2020 | 06:30:28 | * | Tu | 13:30:28 | 13:31:38 | 06:45:04 | Solar declination = zero | | | | 70.184 | 69.635 |
| 09/22/2020 | 06:30:38 | * | Tu | 13:30:38 | 13:31:48 | 06:45:14 | SEPTEMBER EQUINOX declination = -0.16 arc-sec | | | | 70.184 | 69.635 |
| 09/23/2020 | 18:38:11 | * | W | 01:38:12 | 01:39:21 | 18:53:19 | Lunar illum. = 50% | | | | 70.184 | 69.636 |

| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 09/23/2020 | 18:54:51 | * | W | 01:54:52 | 01:56:01 | 19:09:59 | 1Q Moon | | | | 70.184 | 69.636 |
| 10/01/2020 | 09:05:36 | * | Th | 16:05:37 | 16:06:46 | 09:23:17 | Mercury 6.8 arc-sec (0.0) greatest separation 25.8 (E) | | | | 70.184 | 69.641 |
| 10/01/2020 | 14:05:15 | * | Th | 21:05:15 | 21:06:25 | 14:23:00 | Full Moon at 405149 km | | | | 70.184 | 69.641 |
| 10/01/2020 | 14:22:10 | * | Th | 21:22:11 | 21:23:20 | 14:39:56 | Lunar-Solar max. angle 175.188 deg. | | | | 70.184 | 69.641 |
| 10/02/2020 | 21:00:10 | * | F | 04:00:10 | 04:01:20 | 21:18:19 | Lunar occultation of Mars op = 26.535W 37.157S | | | | 70.184 | 69.642 |
| 10/03/2020 | 10:22:25 | * | Sa | 17:22:25 | 17:23:35 | 10:40:45 | Lunar apogee 406321 km | | | | 70.184 | 69.642 |
| 10/04/2020 | 18:00:09 | * | Su | 01:00:10 | 01:01:19 | 18:18:53 | Earth at 1.0 au | | | | 70.184 | 69.643 |
| 10/06/2020 | 07:13:02 | * | Tu | 14:13:03 | 14:14:12 | 07:32:14 | Mars 22.6 arc-sec (-2.6) appears closest 0.4149094au | | | | 70.184 | 69.645 |
| 10/06/2020 | 09:43:01 | * | Tu | 16:43:01 | 16:44:11 | 10:02:14 | Mercury approx. dichotomy | | | | 70.184 | 69.645 |
| 10/09/2020 | 17:39:31 | * | F | 00:39:32 | 00:40:41 | 17:59:40 | LQ Moon | | | | 70.184 | 69.647 |
| 10/09/2020 | 17:57:45 | * | F | 00:57:46 | 00:58:56 | 18:17:54 | Lunar illum. = 50% | | | | 70.184 | 69.647 |
| 10/13/2020 | 16:25:54 | * | Tu | 23:25:54 | 23:27:04 | 16:47:01 | Mars at opposition - mag. -2.6 | | | | 70.184 | 69.651 |
| 10/16/2020 | 12:31:02 | * | F | 19:31:03 | 19:32:12 | 12:52:47 | New Moon (Lunation 1210) | | | | 70.184 | 69.653 |
| 10/16/2020 | 12:53:00 | * | F | 19:53:00 | 19:54:10 | 13:14:45 | Lunar-Solar min. angle 4.292 deg. | | | | 70.184 | 69.653 |
| 10/16/2020 | 16:46:16 | * | F | 23:46:17 | 23:47:27 | 17:08:03 | Lunar perigee 356912 km | | | | 70.184 | 69.653 |
| 10/23/2020 | 06:05:03 | * | F | 13:05:03 | 13:06:13 | 06:27:55 | Lunar illum. = 50% | | | | 70.184 | 69.659 |
| 10/23/2020 | 06:22:55 | * | F | 13:22:56 | 13:24:05 | 06:45:48 | 1Q Moon | | | | 70.184 | 69.659 |
| 10/30/2020 | 11:45:26 | * | F | 18:45:27 | 18:46:37 | 12:08:57 | Lunar apogee 406394 km | | | | 70.184 | 69.665 |
| 10/30/2020 | 16:03:33 | * | F | 23:03:34 | 23:04:43 | 16:27:04 | Venus Perihelion 0.7184148 au | | | | 70.184 | 69.665 |
| 10/30/2020 | 22:28:02 | * | F | 05:28:02 | 05:29:12 | 22:51:34 | Uranus 3.8 arc-sec (5.7) appears closest 18.7876au | | | | 70.184 | 69.665 |
| 10/31/2020 | 07:49:08 | * | Sa | 14:49:09 | 14:50:18 | 08:12:41 | Full Moon at 406167 km | | | | 70.184 | 69.665 |
| 10/31/2020 | 08:22:31 | * | Sa | 15:22:32 | 15:23:42 | 08:46:04 | Lunar-Solar max. angle 176.566 deg. | | | | 70.184 | 69.665 |
| 10/31/2020 | 08:52:43 | * | Sa | 15:52:44 | 15:53:53 | 09:16:16 | Uranus at opposition - mag. 5.7 | | | | 70.184 | 69.665 |
| 11/01/2020 | 19:53:14 | | Su | 02:53:14 | 02:54:24 | 20:16:48 | Mercury Perihelion 0.3074985 au | | | | 70.184 | 69.667 |
| 11/08/2020 | 06:46:05 | | Su | 13:46:06 | 13:47:15 | 07:09:27 | LQ Moon | | | | 70.184 | 69.672 |
| 11/08/2020 | 07:03:21 | | Su | 14:03:21 | 14:04:31 | 07:26:42 | Lunar illum. = 50% | | | | 70.184 | 69.672 |
| 11/08/2020 | 07:37:21 | | Su | 14:37:21 | 14:38:31 | 08:00:42 | Mercury approx. dichotomy | | | | 70.184 | 69.672 |
| 11/10/2020 | 10:03:14 | | Tu | 17:03:15 | 17:04:25 | 10:26:24 | Mercury 6.8 arc-sec (-0.6) greatest separation -19.1 (W) | | | | 70.184 | 69.674 |
| 11/14/2020 | 04:43:08 | | Sa | 11:43:09 | 11:44:18 | 05:05:47 | Lunar perigee 357837 km | | | | 70.184 | 69.677 |
| 11/14/2020 | 22:07:10 | | Sa | 05:07:11 | 05:08:21 | 22:29:41 | New Moon (Lunation 1211) | | | | 70.184 | 69.678 |
| 11/14/2020 | 22:28:06 | | Sa | 05:28:06 | 05:29:16 | 22:50:37 | Lunar-Solar min. angle 2.353 deg. | | | | 70.184 | 69.678 |
| 11/21/2020 | 21:25:49 | | Sa | 04:25:49 | 04:26:59 | 21:46:47 | Lunar illum. = 50% | | | | 70.184 | 69.684 |
| 11/21/2020 | 21:45:00 | | Sa | 04:45:01 | 04:46:10 | 22:05:58 | 1Q Moon | | | | 70.184 | 69.684 |
| 11/26/2020 | 17:28:37 | | Th | 00:28:37 | 00:29:47 | 17:48:08 | Lunar apogee 405894 km | | | | 70.184 | 69.688 |
| 11/30/2020 | 00:32:44 | | M | 07:32:45 | 07:33:54 | 00:51:07 | P1-First contact Lunar | h | -65.28 | 63.45 | 70.184 | 69.691 |
| 11/30/2020 | 02:29:40 | | M | 09:29:41 | 09:30:50 | 02:48:01 | Full Moon at 401726 km | | | | 70.184 | 69.691 |
| 11/30/2020 | 02:42:51 | | M | 09:42:51 | 09:44:01 | 03:01:12 | PARTIAL PENUMBRAL LUNAR MID-POINT | h | -46.65 | 45.54 | 70.184 | 69.691 |
| 11/30/2020 | 02:42:51 | | M | 09:42:52 | 09:44:02 | 03:01:13 | Lunar-Solar max. angle 178.971 deg. | | | | 70.184 | 69.691 |
| 11/30/2020 | 04:53:01 | | M | 11:53:02 | 11:54:12 | 05:11:20 | P4-Last contact | | -23.52 | 23.15 | 70.184 | 69.691 |
| 12/07/2020 | 17:36:36 | | M | 00:36:36 | 00:37:46 | 17:51:51 | LQ Moon | | | | 70.184 | 69.697 |
| 12/07/2020 | 17:53:04 | | M | 00:53:05 | 00:54:14 | 18:08:20 | Lunar illum. = 50% | | | | 70.184 | 69.697 |
| 12/12/2020 | 13:42:05 | | Sa | 20:42:06 | 20:43:16 | 13:55:09 | Lunar perigee 361773 km | | | | 70.184 | 69.700 |
| 12/12/2020 | 14:06:18 | | Sa | 21:06:19 | 21:07:28 | 14:19:21 | Lunar occultation of Venus op = 148.554W 27.867N | | | | 70.184 | 69.700 |
| 12/14/2020 | 06:33:54 | | M | 13:33:55 | 13:35:04 | 06:46:09 | Start Partial Solar | | -8.29 | -8.23 | 70.184 | 69.702 |
| 12/14/2020 | 07:32:34 | | M | 14:32:35 | 14:33:44 | 07:44:47 | Start Total Solar | | 1.32 | 0.90 | 70.184 | 69.702 |
| 12/14/2020 | 09:13:29 | | M | 16:13:29 | 16:14:39 | 09:25:40 | TOTAL SOLAR ECLIPSE MID-POINT | | 14.02 | 12.81 | 70.184 | 69.702 |
| 12/14/2020 | 09:13:29 | | M | 16:13:29 | 16:14:39 | 09:25:40 | At 67.953W 40.337S magnitude=1.0131 | | | | 70.184 | 69.702 |
| 12/14/2020 | 09:13:30 | | M | 16:13:30 | 16:14:40 | 09:25:41 | Lunar-Solar min. angle 0.294 deg. | | | | 70.184 | 69.702 |
| 12/14/2020 | 09:16:34 | | M | 16:16:35 | 16:17:44 | 09:28:45 | New Moon (Lunation 1212) | | | | 70.184 | 69.702 |
| 12/14/2020 | 10:54:18 | | M | 17:54:18 | 17:55:28 | 11:06:27 | End Total Solar | | 21.58 | 20.06 | 70.184 | 69.702 |
| 12/14/2020 | 11:53:05 | | M | 18:53:05 | 18:54:15 | 12:05:13 | End Partial Solar | | 22.68 | 21.25 | 70.184 | 69.702 |
| 12/15/2020 | 19:30:49 | | Tu | 02:30:50 | 02:32:00 | 19:42:19 | Mercury Aphelion 0.4666997 au | | | | 70.184 | 69.703 |
| 12/21/2020 | 03:02:19 | | M | 10:02:19 | 10:03:29 | 03:11:11 | DECEMBER SOLSTICE declination = -23.4371 | | | | 70.184 | 69.707 |
| 12/21/2020 | 06:32:12 | | M | 13:32:12 | 13:33:22 | 06:41:00 | Conjunction (RA) of Jupiter and Saturn | | | | 70.184 | 69.707 |
| 12/21/2020 | 11:20:43 | | M | 18:20:44 | 18:21:54 | 11:29:25 | Conjunction of Jupiter and Saturn | | | | 70.184 | 69.707 |
| 12/21/2020 | 11:21:06 | | M | 18:21:07 | 18:22:16 | 11:29:48 | Jupiter and Saturn closest (0.1 deg.) | | | | 70.184 | 69.707 |
| 12/21/2020 | 16:20:52 | | M | 23:20:52 | 23:22:02 | 16:29:27 | Lunar illum. = 50% | | | | 70.184 | 69.707 |
| 12/21/2020 | 16:41:12 | | M | 23:41:13 | 23:42:22 | 16:49:47 | 1Q Moon | | | | 70.184 | 69.707 |
| 12/24/2020 | 09:31:24 | | Th | 16:31:25 | 16:32:35 | 09:38:39 | Lunar apogee 405012 km | | | | 70.184 | 69.709 |
| 12/29/2020 | 20:08:18 | | Tu | 03:08:18 | 03:09:28 | 20:12:53 | Lunar-Solar max. angle 178.298 deg. | | | | 70.184 | 69.713 |
| 12/29/2020 | 20:28:12 | | Tu | 03:28:12 | 03:29:22 | 20:32:46 | Full Moon at 392772 km | | | | 70.184 | 69.713 |
| 01/02/2021 | 06:50:33 | | Sa | 13:50:33 | 13:51:43 | 06:53:30 | Earth Perihelion 0.9832571 au | | | | 70.184 | 69.716 |
| 01/06/2021 | 02:37:13 | | W | 09:37:13 | 09:38:23 | 02:38:27 | LQ Moon | | | | 70.184 | 69.719 |
| 01/06/2021 | 02:53:12 | | W | 09:53:13 | 09:54:22 | 02:54:26 | Lunar illum. = 50% | | | | 70.184 | 69.719 |
| 01/09/2021 | 08:36:48 | | Sa | 15:36:49 | 15:37:59 | 08:36:40 | Lunar perigee 367387 km | | | | 70.184 | 69.721 |
| 01/09/2021 | 14:15:53 | | Sa | 21:15:53 | 21:17:03 | 14:15:39 | Conjunction (RA) of Mercury and Saturn | | | | 70.184 | 69.722 |
| 01/09/2021 | 20:17:15 | | Sa | 03:17:16 | 03:18:25 | 20:16:55 | Conjunction of Mercury and Saturn | | | | 70.184 | 69.722 |
| 01/09/2021 | 21:09:22 | | Sa | 04:09:22 | 04:10:32 | 21:09:01 | Mercury and Saturn closest (1.61 deg.) | | | | 70.184 | 69.722 |
| 01/11/2021 | 04:07:18 | | M | 11:07:18 | 11:08:28 | 04:06:26 | Conjunction (RA) of Mercury and Jupiter | | | | 70.184 | 69.723 |

| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01/11/2021 | 10:19:23 | | M | 17:19:24 | 17:20:33 | 10:18:25 | Conjunction of Mercury and Jupiter | | | | 70.184 | 69.723 |
| 01/11/2021 | 11:31:59 | | M | 18:31:59 | 18:33:09 | 11:31:00 | Mercury and Jupiter closest (1.41 deg.) | | | | 70.184 | 69.723 |
| 01/12/2021 | 21:34:03 | | Tu | 04:34:04 | 04:35:14 | 21:32:32 | Lunar-Solar min. angle 2.869 deg. | | | | 70.184 | 69.724 |
| 01/12/2021 | 22:00:10 | | Tu | 05:00:10 | 05:01:20 | 21:58:38 | New Moon (Lunation 1213) | | | | 70.184 | 69.724 |
| 01/20/2021 | 13:40:38 | | W | 20:40:39 | 20:41:48 | 13:36:34 | Lunar illum. = 50% | | | | 70.184 | 69.730 |
| 01/20/2021 | 14:01:36 | | W | 21:01:36 | 21:02:46 | 13:57:32 | 1Q Moon | | | | 70.184 | 69.730 |
| 01/21/2021 | 06:10:51 | | Th | 13:10:51 | 13:12:01 | 06:06:35 | Lunar apogee 404360 km | | | | 70.184 | 69.730 |
| 01/23/2021 | 18:56:51 | | Sa | 01:56:51 | 01:58:01 | 18:51:56 | Mercury 7.0 arc-sec (-0.7) greatest separation 18.6 (E) | | | | 70.184 | 69.732 |
| 01/25/2021 | 00:46:36 | | M | 07:46:37 | 07:47:46 | 00:41:24 | Mercury approx. dichotomy | | | | 70.184 | 69.733 |
| 01/28/2021 | 11:48:02 | | Th | 18:48:02 | 18:49:12 | 11:42:08 | Lunar-Solar max. angle 176.076 deg. | | | | 70.184 | 69.736 |
| 01/28/2021 | 12:16:13 | | Th | 19:16:14 | 19:17:23 | 12:10:19 | Full Moon at 381521 km | | | | 70.184 | 69.736 |
| 01/28/2021 | 19:08:41 | | Th | 02:08:41 | 02:09:51 | 19:02:44 | Mercury Perihelion 0.3074964 au | | | | 70.184 | 69.736 |
| 02/03/2021 | 12:02:49 | | W | 19:02:50 | 19:04:00 | 11:56:06 | Lunar perigee 370116 km | | | | 70.184 | 69.741 |
| 02/04/2021 | 10:37:05 | | Th | 17:37:06 | 17:38:15 | 10:30:17 | LQ Moon | | | | 70.184 | 69.742 |
| 02/04/2021 | 10:52:56 | | Th | 17:52:56 | 17:54:06 | 10:46:07 | Lunar illum. = 50% | | | | 70.184 | 69.742 |
| 02/05/2021 | 22:05:40 | | F | 05:05:40 | 05:06:50 | 21:58:45 | Conjunction (RA) of Venus and Saturn | | | | 70.184 | 69.743 |
| 02/05/2021 | 23:53:30 | | F | 06:53:30 | 06:54:40 | 23:46:35 | Venus and Saturn closest (0.38 deg.) | | | | 70.184 | 69.743 |
| 02/06/2021 | 00:07:02 | | Sa | 07:07:03 | 07:08:12 | 00:00:07 | Conjunction of Venus and Saturn | | | | 70.184 | 69.743 |
| 02/11/2021 | 05:01:49 | | Th | 12:01:50 | 12:02:59 | 04:54:44 | Conjunction (RA) of Venus and Jupiter | | | | 70.184 | 69.747 |
| 02/11/2021 | 07:43:01 | | Th | 14:43:02 | 14:44:12 | 07:35:57 | Venus and Jupiter closest (0.43 deg.) | | | | 70.184 | 69.747 |
| 02/11/2021 | 07:59:39 | | Th | 14:59:39 | 15:00:49 | 07:52:34 | Conjunction of Venus and Jupiter | | | | 70.184 | 69.747 |
| 02/11/2021 | 11:44:07 | | Th | 18:44:07 | 18:45:17 | 11:37:02 | Lunar-Solar min. angle 4.589 deg. | | | | 70.184 | 69.748 |
| 02/11/2021 | 12:05:39 | | Th | 19:05:40 | 19:06:50 | 11:58:35 | New Moon (Lunation 1214) | | | | 70.184 | 69.748 |
| 02/12/2021 | 09:49:07 | | F | 16:49:07 | 16:50:17 | 09:42:03 | Conjunction (RA) of Mercury and Venus | | | | 70.184 | 69.748 |
| 02/13/2021 | 00:48:00 | | Sa | 07:48:00 | 07:49:10 | 00:40:57 | Conjunction of Mercury and Venus | | | | 70.184 | 69.749 |
| 02/13/2021 | 02:31:23 | | Sa | 09:31:23 | 09:32:33 | 02:24:20 | Mercury and Venus closest (4.56 deg.) | | | | 70.184 | 69.749 |
| 02/18/2021 | 03:21:35 | | Th | 10:21:36 | 10:22:46 | 03:14:50 | Lunar apogee 404467 km | | | | 70.184 | 69.753 |
| 02/19/2021 | 11:26:33 | | F | 18:26:34 | 18:27:44 | 11:19:55 | Lunar illum. = 50% | | | | 70.184 | 69.754 |
| 02/19/2021 | 11:47:19 | | F | 18:47:20 | 18:48:29 | 11:40:41 | 1Q Moon | | | | 70.184 | 69.754 |
| 02/20/2021 | 01:36:40 | | Sa | 08:36:41 | 08:37:51 | 01:30:06 | Venus Aphelion 0.72824 au | | | | 70.184 | 69.755 |
| 02/27/2021 | 01:11:01 | | Sa | 08:11:01 | 08:12:11 | 01:05:27 | Lunar-Solar max. angle 175.033 deg. | | | | 70.184 | 69.761 |
| 02/27/2021 | 01:17:19 | | Sa | 08:17:20 | 08:18:29 | 01:11:46 | Full Moon at 370595 km | | | | 70.184 | 69.761 |
| 03/01/2021 | 22:17:55 | | M | 05:17:55 | 05:19:05 | 22:12:55 | Lunar perigee 365423 km | | | | 70.184 | 69.763 |
| 03/02/2021 | 07:21:47 | | Tu | 14:21:47 | 14:22:57 | 07:16:51 | Mercury approx. dichotomy | | | | 70.184 | 69.764 |
| 03/05/2021 | 18:30:12 | | F | 01:30:13 | 01:31:22 | 18:26:02 | LQ Moon | | | | 70.184 | 69.767 |
| 03/05/2021 | 18:46:12 | | F | 01:46:12 | 01:47:22 | 18:42:02 | Lunar illum. = 50% | | | | 70.184 | 69.767 |
| 03/06/2021 | 04:22:11 | | Sa | 11:22:11 | 11:23:21 | 04:18:07 | Mercury 7.1 arc-sec (0.1) greatest separation -27.3 (W) | | | | 70.184 | 69.767 |
| 03/13/2021 | 03:21:09 | | Sa | 10:21:09 | 10:22:19 | 03:18:51 | New Moon (Lunation 1215) | | | | 70.184 | 69.774 |
| 03/13/2021 | 03:29:59 | | Sa | 10:29:59 | 10:31:09 | 03:27:41 | Lunar-Solar min. angle 4.944 deg. | | | | 70.184 | 69.774 |
| 03/13/2021 | 18:45:53 | | Sa | 01:45:54 | 01:47:04 | 18:43:46 | Mercury Aphelion 0.4666993 au | | | | 70.184 | 69.775 |
| 03/17/2021 | 22:02:49 | * | W | 05:02:50 | 05:03:59 | 22:01:52 | Lunar apogee 405253 km | | | | 70.184 | 69.778 |
| 03/20/2021 | 02:37:08 | * | Sa | 09:37:08 | 09:38:18 | 02:36:49 | Solar declination = zero | | | | 70.184 | 69.780 |
| 03/20/2021 | 02:37:27 | * | Sa | 09:37:27 | 09:38:37 | 02:37:08 | MARCH EQUINOX declination = 0.31 arc-sec | | | | 70.184 | 69.780 |
| 03/21/2021 | 07:20:35 | * | Su | 14:20:36 | 14:21:46 | 07:20:38 | Lunar illum. = 50% | | | | 70.184 | 69.782 |
| 03/21/2021 | 07:40:24 | * | Su | 14:40:24 | 14:41:34 | 07:40:27 | 1Q Moon | | | | 70.184 | 69.782 |
| 03/28/2021 | 11:48:10 | * | Su | 18:48:10 | 18:49:20 | 11:50:23 | Full Moon at 362174 km | | | | 70.184 | 69.788 |
| 03/28/2021 | 12:07:26 | * | Su | 19:07:26 | 19:08:36 | 12:09:39 | Lunar-Solar max. angle 175.435 deg. | | | | 70.184 | 69.788 |
| 03/29/2021 | 23:15:57 | * | M | 06:15:58 | 06:17:08 | 23:18:37 | Lunar perigee 360309 km | | | | 70.184 | 69.790 |
| 04/03/2021 | 11:57:35 | * | Sa | 18:57:35 | 18:58:45 | 12:01:35 | Earth at 1.0 au | | | | 70.184 | 69.794 |
| 04/04/2021 | 03:02:26 | * | Su | 10:02:27 | 10:03:37 | 03:06:38 | LQ Moon | | | | 70.184 | 69.795 |
| 04/04/2021 | 03:18:53 | * | Su | 10:18:54 | 10:20:04 | 03:23:05 | Lunar illum. = 50% | | | | 70.184 | 69.795 |
| 04/11/2021 | 19:30:50 | * | Su | 02:30:50 | 02:32:00 | 19:37:08 | New Moon (Lunation 1216) | | | | 70.184 | 69.802 |
| 04/11/2021 | 20:03:01 | * | Su | 03:03:01 | 03:04:11 | 20:09:19 | Lunar-Solar min. angle 3.875 deg. | | | | 70.184 | 69.802 |
| 04/14/2021 | 10:45:50 | * | W | 17:45:50 | 17:47:00 | 10:52:47 | Lunar apogee 406119 km | | | | 70.184 | 69.804 |
| 04/17/2021 | 05:09:48 | * | Sa | 12:09:48 | 12:10:58 | 05:17:24 | Lunar occultation of Mars op = 58.762E 16.645N | | | | 70.184 | 69.807 |
| 04/19/2021 | 23:40:27 | * | M | 06:40:28 | 06:41:37 | 23:48:40 | Lunar illum. = 50% | | | | 70.184 | 69.810 |
| 04/19/2021 | 23:58:56 | * | M | 06:58:56 | 07:00:06 | 00:07:08 | 1Q Moon | | | | 70.184 | 69.810 |
| 04/26/2021 | 18:23:22 | * | M | 01:23:23 | 01:24:32 | 18:32:49 | Mercury Perihelion 0.3074967 au | | | | 70.184 | 69.816 |
| 04/26/2021 | 20:31:32 | * | M | 03:31:32 | 03:32:42 | 20:41:00 | Full Moon at 357616 km | | | | 70.184 | 69.816 |
| 04/26/2021 | 20:55:09 | * | M | 03:55:10 | 03:56:19 | 21:04:37 | Lunar-Solar max. angle 177.098 deg. | | | | 70.184 | 69.816 |
| 04/27/2021 | 08:22:24 | * | Tu | 15:22:25 | 15:23:34 | 08:31:57 | Lunar perigee 357378 km | | | | 70.184 | 69.817 |
| 05/03/2021 | 12:50:05 | * | M | 19:50:05 | 19:51:15 | 13:00:24 | LQ Moon | | | | 70.184 | 69.822 |
| 05/03/2021 | 13:07:15 | * | M | 20:07:16 | 20:08:26 | 13:17:34 | Lunar illum. = 50% | | | | 70.184 | 69.822 |
| 05/11/2021 | 11:59:47 | * | Tu | 18:59:47 | 19:00:57 | 12:10:33 | New Moon (Lunation 1217) | | | | 70.184 | 69.829 |
| 05/11/2021 | 12:21:39 | * | Tu | 19:21:39 | 19:22:49 | 12:32:25 | Lunar-Solar min. angle 1.746 deg. | | | | 70.184 | 69.829 |
| 05/11/2021 | 14:53:17 | * | Tu | 21:53:17 | 21:54:27 | 15:04:02 | Lunar apogee 406512 km | | | | 70.184 | 69.829 |
| 05/11/2021 | 22:23:16 | * | Tu | 05:23:16 | 05:24:26 | 22:34:02 | Mercury approx. dichotomy | | | | 70.184 | 69.829 |
| 05/12/2021 | 15:29:35 | * | W | 22:29:36 | 22:30:46 | 15:40:22 | Lunar occultation of Venus op = 131.922W 26.591S | | | | 70.184 | 69.830 |
| 05/16/2021 | 22:53:38 | * | Su | 05:53:38 | 05:54:48 | 23:04:21 | Mercury 8.1 arc-sec (0.3) greatest separation 22.0 (E) | | | | 70.184 | 69.833 |

| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 05/19/2021 | 11:55:27 | * | W | 18:55:27 | 18:56:37 | 12:06:04 | Lunar illum. = 50% | | | | 70.184 | 69.835 |
| 05/19/2021 | 12:12:37 | * | W | 19:12:37 | 19:13:47 | 12:23:14 | 1Q Moon | | | | 70.184 | 69.835 |
| 05/25/2021 | 18:49:54 | * | Tu | 01:49:55 | 01:51:04 | 19:00:00 | Lunar perigee 357311 km | | | | 70.184 | 69.840 |
| 05/26/2021 | 01:47:48 | * | W | 08:47:48 | 08:48:58 | 01:57:52 | P1-First contact Lunar | h | -19.41 | 18.77 | 70.184 | 69.841 |
| 05/26/2021 | 02:44:36 | * | W | 09:44:37 | 09:45:47 | 02:54:41 | U1-begin umbral Lunar | P | -13.53 | 12.78 | 70.184 | 69.841 |
| 05/26/2021 | 04:09:22 | * | W | 11:09:23 | 11:10:33 | 04:19:26 | U2-begin total Lunar | T | -1.31 | 1.60 | 70.184 | 69.841 |
| 05/26/2021 | 04:13:52 | * | W | 11:13:52 | 11:15:02 | 04:23:56 | Full Moon at 357461 km | | | | 70.184 | 69.841 |
| 05/26/2021 | 04:18:42 | * | W | 11:18:42 | 11:19:52 | 04:28:45 | TOTAL LUNAR MID-POINT | T | 0.10 | 0.37 | 70.184 | 69.841 |
| 05/26/2021 | 04:18:43 | * | W | 11:18:43 | 11:19:53 | 04:28:46 | Lunar-Solar max. angle 179.512 deg. | | | | 70.184 | 69.841 |
| 05/26/2021 | 04:28:00 | * | W | 11:28:01 | 11:29:11 | 04:38:04 | U3-Totality ends | | 1.36 | -0.97 | 70.184 | 69.841 |
| 05/26/2021 | 05:52:46 | * | W | 12:52:46 | 12:53:56 | 06:02:49 | U4-Outside umbra | | 15.13 | -15.21 | 70.184 | 69.841 |
| 05/26/2021 | 06:49:36 | * | W | 13:49:36 | 13:50:46 | 06:59:39 | P4-Last contact | | 25.14 | -24.82 | 70.184 | 69.841 |
| 06/02/2021 | 00:24:23 | * | W | 07:24:24 | 07:25:34 | 00:33:31 | LQ Moon | | | | 70.184 | 69.846 |
| 06/02/2021 | 00:42:30 | * | W | 07:42:30 | 07:43:40 | 00:51:37 | Lunar illum. = 50% | | | | 70.184 | 69.846 |
| 06/07/2021 | 19:27:05 | * | M | 02:27:05 | 02:28:15 | 19:35:11 | Lunar apogee 406228 km | | | | 70.184 | 69.848 |
| 06/09/2021 | 18:01:05 | * | W | 01:01:06 | 01:02:16 | 18:08:48 | Mercury Aphelion 0.4666987 au | | | | 70.184 | 69.849 |
| 06/10/2021 | 01:12:20 | * | Th | 08:12:20 | 08:13:30 | 01:19:59 | Start Partial Solar | | -20.46 | -20.39 | 70.184 | 69.849 |
| 06/10/2021 | 02:49:51 | * | Th | 09:49:51 | 09:51:01 | 02:57:29 | Start Annular Solar | | -11.62 | -11.60 | 70.184 | 69.849 |
| 06/10/2021 | 03:41:54 | * | Th | 10:41:54 | 10:43:04 | 03:49:32 | ANNULAR SOLAR ECLIPSE MID-POINT | | -4.79 | -4.98 | 70.184 | 69.849 |
| 06/10/2021 | 03:41:54 | * | Th | 10:41:54 | 10:43:04 | 03:49:32 | At 66.557W 80.799N magnitude=0.9721 | | | | 70.184 | 69.849 |
| 06/10/2021 | 03:41:55 | * | Th | 10:41:55 | 10:43:05 | 03:49:33 | Lunar-Solar min. angle 0.825 deg. | | | | 70.184 | 69.849 |
| 06/10/2021 | 03:42:48 | * | Th | 10:42:48 | 10:43:58 | 03:50:26 | SOLAR ECLIPSE MAXIMUM 89.2% | | -4.64 | -4.84 | 70.184 | 69.849 |
| 06/10/2021 | 03:42:48 | * | Th | 10:42:48 | 10:43:58 | 03:50:26 | At 66.81W 81.238N magnitude=0.9721 | | | | 70.184 | 69.849 |
| 06/10/2021 | 03:52:38 | * | Th | 10:52:38 | 10:53:48 | 04:00:16 | New Moon (Lunation 1218) | | | | 70.184 | 69.849 |
| 06/10/2021 | 04:33:47 | * | Th | 11:33:47 | 11:34:57 | 04:41:24 | End Annular Solar | | 3.11 | 2.71 | 70.184 | 69.849 |
| 06/10/2021 | 06:11:21 | * | Th | 13:11:21 | 13:12:31 | 06:18:57 | End Partial Solar | | 19.14 | 18.20 | 70.184 | 69.849 |
| 06/12/2021 | 10:34:08 | * | Sa | 17:34:09 | 17:35:19 | 10:41:18 | Venus Perihelion 0.7184188 au | | | | 70.184 | 69.850 |
| 06/17/2021 | 20:38:06 | * | Th | 03:38:07 | 03:39:16 | 20:44:06 | Lunar illum. = 50% | | | | 70.184 | 69.853 |
| 06/17/2021 | 20:54:16 | * | Th | 03:54:17 | 03:55:26 | 21:00:16 | 1Q Moon | | | | 70.184 | 69.853 |
| 06/20/2021 | 20:32:08 | * | Su | 03:32:09 | 03:33:18 | 20:37:29 | JUNE SOLSTICE declination = 23.4374 | | | | 70.184 | 69.854 |
| 06/23/2021 | 02:54:57 | * | W | 09:54:58 | 09:56:08 | 02:59:49 | Lunar perigee 359956 km | | | | 70.184 | 69.855 |
| 06/24/2021 | 11:20:45 | * | Th | 18:20:45 | 18:21:55 | 11:25:19 | Lunar-Solar max. angle 177.971 deg. | | | | 70.184 | 69.855 |
| 06/24/2021 | 11:39:41 | * | Th | 18:39:41 | 18:40:51 | 11:44:15 | Full Moon at 361561 km | | | | 70.184 | 69.855 |
| 07/01/2021 | 14:10:38 | * | Th | 21:10:38 | 21:11:48 | 14:13:46 | LQ Moon | | | | 70.184 | 69.858 |
| 07/01/2021 | 14:29:45 | * | Th | 21:29:45 | 21:30:55 | 14:32:53 | Lunar illum. = 50% | | | | 70.184 | 69.858 |
| 07/04/2021 | 12:45:06 | * | Su | 19:45:06 | 19:46:16 | 12:47:42 | Mercury 8.0 arc-sec (0.3) greatest separation -21.6 (W) | | | | 70.184 | 69.859 |
| 07/05/2021 | 07:46:30 | * | M | 14:46:31 | 14:47:40 | 07:48:58 | Lunar apogee 405341 km | | | | 70.184 | 69.859 |
| 07/05/2021 | 15:27:24 | * | M | 22:27:24 | 22:28:34 | 15:29:49 | Earth Aphelion 1.0167292 au | | | | 70.184 | 69.859 |
| 07/09/2021 | 10:51:01 | * | F | 17:51:01 | 17:52:11 | 10:52:50 | Mercury approx. dichotomy | | | | 70.184 | 69.860 |
| 07/09/2021 | 17:45:38 | * | F | 00:45:38 | 00:46:48 | 17:47:24 | Lunar-Solar min. angle 3.16 deg. | | | | 70.184 | 69.860 |
| 07/09/2021 | 18:16:36 | * | F | 01:16:37 | 01:17:47 | 18:18:23 | New Moon (Lunation 1219) | | | | 70.184 | 69.860 |
| 07/12/2021 | 17:25:25 | * | M | 00:25:25 | 00:26:35 | 17:26:48 | Mars Aphelion 1.665955 au | | | | 70.184 | 69.861 |
| 07/13/2021 | 00:07:20 | * | Tu | 07:07:20 | 07:08:30 | 00:08:40 | Conjunction (RA) of Venus and Mars | | | | 70.184 | 69.861 |
| 07/13/2021 | 06:32:40 | * | Tu | 13:32:40 | 13:33:50 | 06:33:58 | Conjunction of Venus and Mars | | | | 70.184 | 69.861 |
| 07/13/2021 | 06:35:02 | * | Tu | 13:35:02 | 13:36:12 | 06:36:20 | Venus and Mars closest (0.47 deg.) | | | | 70.184 | 69.861 |
| 07/15/2021 | 03:21:02 | * | Th | 10:21:02 | 10:22:12 | 03:22:09 | Pluto 0.1 arc-sec (14.3) appears closest 33.3058au | | | | 70.184 | 69.861 |
| 07/17/2021 | 02:55:06 | * | Sa | 09:55:06 | 09:56:16 | 02:56:02 | Lunar illum. = 50% | | | | 70.184 | 69.862 |
| 07/17/2021 | 03:10:39 | * | Sa | 10:10:39 | 10:11:49 | 03:11:35 | 1Q Moon | | | | 70.184 | 69.862 |
| 07/17/2021 | 15:46:18 | * | Sa | 22:46:18 | 22:47:28 | 15:47:11 | Pluto at opposition - mag. 14.3 | | | | 70.184 | 69.862 |
| 07/21/2021 | 03:24:26 | * | W | 10:24:26 | 10:25:36 | 03:25:07 | Lunar perigee 364520 km | | | | 70.184 | 69.863 |
| 07/23/2021 | 17:39:16 | * | F | 00:39:17 | 00:40:26 | 17:39:53 | Mercury Perihelion 0.3074991 au | | | | 70.184 | 69.863 |
| 07/23/2021 | 19:11:16 | * | F | 02:11:16 | 02:12:26 | 19:11:52 | Lunar-Solar max. angle 175.983 deg. | | | | 70.184 | 69.863 |
| 07/23/2021 | 19:36:54 | * | F | 02:36:54 | 02:38:04 | 19:37:30 | Full Moon at 369211 km | | | | 70.184 | 69.863 |
| 07/31/2021 | 06:15:59 | * | Sa | 13:16:00 | 13:17:10 | 06:16:44 | LQ Moon | | | | 70.184 | 69.865 |
| 07/31/2021 | 06:35:58 | * | Sa | 13:35:58 | 13:37:08 | 06:36:43 | Lunar illum. = 50% | | | | 70.184 | 69.865 |
| 08/01/2021 | 23:14:27 | * | Su | 06:14:28 | 06:15:37 | 23:15:19 | Saturn at opposition - mag. 0.2 | | | | 70.184 | 69.866 |
| 08/02/2021 | 00:35:07 | * | M | 07:35:08 | 07:36:18 | 00:35:59 | Lunar apogee 404410 km | | | | 70.184 | 69.866 |
| 08/02/2021 | 04:06:28 | * | M | 11:06:29 | 11:07:38 | 04:07:21 | Saturn 18.6 arc-sec (0.2) appears closest 8.93529au | | | | 70.184 | 69.866 |
| 08/08/2021 | 06:30:04 | * | Su | 13:30:04 | 13:31:14 | 06:31:35 | Lunar-Solar min. angle 4.668 deg. | | | | 70.184 | 69.868 |
| 08/08/2021 | 06:50:07 | * | Su | 13:50:08 | 13:51:17 | 06:51:38 | New Moon (Lunation 1220) | | | | 70.184 | 69.868 |
| 08/15/2021 | 08:04:15 | * | Su | 15:04:16 | 15:05:26 | 08:06:58 | Lunar illum. = 50% | | | | 70.184 | 69.871 |
| 08/15/2021 | 08:19:35 | * | Su | 15:19:36 | 15:20:45 | 08:22:18 | 1Q Moon | | | | 70.184 | 69.871 |
| 08/17/2021 | 02:15:47 | * | Tu | 09:15:47 | 09:16:57 | 02:18:51 | Lunar perigee 369124 km | | | | 70.184 | 69.871 |
| 08/18/2021 | 20:18:18 | * | W | 03:18:18 | 03:19:28 | 20:21:46 | Mercury and Mars closest (0.07 deg.) | | | | 70.184 | 69.872 |
| 08/18/2021 | 20:27:41 | * | W | 03:27:42 | 03:28:51 | 20:31:10 | Conjunction of Mercury and Mars | | | | 70.184 | 69.872 |
| 08/18/2021 | 21:09:59 | * | W | 04:09:59 | 04:11:09 | 21:13:28 | Conjunction (RA) of Mercury and Mars | | | | 70.184 | 69.872 |
| 08/19/2021 | 17:28:34 | * | Th | 00:28:34 | 00:29:44 | 17:32:15 | Jupiter at opposition - mag. -2.9 | | | | 70.184 | 69.872 |
| 08/19/2021 | 22:25:50 | * | Th | 05:25:50 | 05:27:00 | 22:29:34 | Jupiter 49.1 arc-sec (-2.9) appears closest 4.013203au | | | | 70.184 | 69.872 |
| 08/22/2021 | 04:55:05 | * | Su | 11:55:05 | 11:56:15 | 04:59:23 | Lunar-Solar max. angle 175.031 deg. | | | | 70.184 | 69.873 |

| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 08/22/2021 | 05:01:57 | * | Su | 12:01:58 | 12:03:07 | 05:06:15 | Full Moon at 379232 km | | | | 70.184 | 69.873 |
| 08/29/2021 | 19:22:15 | * | Su | 02:22:15 | 02:23:25 | 19:28:42 | Lunar apogee 404100 km | | | | 70.184 | 69.876 |
| 08/30/2021 | 00:13:13 | * | M | 07:13:13 | 07:14:23 | 00:19:44 | LQ Moon | | | | 70.184 | 69.876 |
| 08/30/2021 | 00:33:35 | * | M | 07:33:36 | 07:34:46 | 00:40:07 | Lunar illum. = 50% | | | | 70.184 | 69.876 |
| 09/05/2021 | 17:17:23 | * | Su | 00:17:24 | 00:18:34 | 17:26:05 | Mercury Aphelion 0.4666978 au | | | | 70.184 | 69.880 |
| 09/06/2021 | 17:51:45 | * | M | 00:51:46 | 00:52:56 | 18:00:48 | New Moon (Lunation 1221) | | | | 70.184 | 69.881 |
| 09/06/2021 | 18:00:17 | * | M | 01:00:17 | 01:01:27 | 18:09:19 | Lunar-Solar min. angle 4.947 deg. | | | | 70.184 | 69.881 |
| 09/11/2021 | 03:03:28 | * | Sa | 10:03:28 | 10:04:38 | 03:14:01 | Lunar perigee 368461 km | | | | 70.184 | 69.883 |
| 09/13/2021 | 05:35:09 | * | M | 12:35:09 | 12:36:19 | 05:46:26 | Neptune 2.4 arc-sec (7.8) appears closest 28.9165au | | | | 70.184 | 69.884 |
| 09/13/2021 | 13:23:51 | * | M | 20:23:51 | 20:25:01 | 13:35:16 | Lunar illum. = 50% | | | | 70.184 | 69.885 |
| 09/13/2021 | 13:39:21 | * | M | 20:39:21 | 20:40:31 | 13:50:46 | 1Q Moon | | | | 70.184 | 69.885 |
| 09/13/2021 | 21:24:30 | * | M | 04:24:31 | 04:25:41 | 21:36:02 | Mercury 7.0 arc-sec (0.1) greatest separation 26.8 (E) | | | | 70.184 | 69.885 |
| 09/14/2021 | 02:21:30 | * | Tu | 09:21:30 | 09:22:40 | 02:33:06 | Neptune at opposition - mag. 7.8 | | | | 70.184 | 69.885 |
| 09/17/2021 | 20:00:44 | * | F | 03:00:44 | 03:01:54 | 20:13:40 | Mercury approx. dichotomy | | | | 70.184 | 69.887 |
| 09/20/2021 | 16:54:42 | * | M | 23:54:42 | 23:55:52 | 17:08:40 | Full Moon at 389988 km | | | | 70.184 | 69.889 |
| 09/20/2021 | 17:16:39 | * | M | 00:16:39 | 00:17:49 | 17:30:37 | Lunar-Solar max. angle 175.401 deg. | | | | 70.184 | 69.889 |
| 09/22/2021 | 12:20:32 | * | W | 19:20:32 | 19:21:42 | 12:35:09 | Solar declination = zero | | | | 70.184 | 69.890 |
| 09/22/2021 | 12:21:04 | * | W | 19:21:04 | 19:22:14 | 12:35:40 | SEPTEMBER EQUINOX declination = -0.52 arc-sec | | | | 70.184 | 69.890 |
| 09/26/2021 | 14:43:40 | * | Su | 21:43:40 | 21:44:50 | 14:59:42 | Lunar apogee 404640 km | | | | 70.184 | 69.893 |
| 09/28/2021 | 18:57:08 | * | Tu | 01:57:08 | 01:58:18 | 19:13:54 | LQ Moon | | | | 70.184 | 69.894 |
| 09/28/2021 | 19:17:17 | * | Tu | 02:17:18 | 02:18:27 | 19:34:04 | Lunar illum. = 50% | | | | 70.184 | 69.894 |
| 10/02/2021 | 17:43:47 | * | Sa | 00:43:47 | 00:44:57 | 18:01:49 | Venus Aphelion 0.7282313 au | | | | 70.184 | 69.897 |
| 10/05/2021 | 05:08:56 | * | Tu | 12:08:57 | 12:10:07 | 05:27:44 | Earth at 1.0 au | | | | 70.184 | 69.899 |
| 10/06/2021 | 04:05:23 | * | W | 11:05:23 | 11:06:33 | 04:24:28 | New Moon (Lunation 1222) | | | | 70.184 | 69.899 |
| 10/06/2021 | 04:31:23 | * | W | 11:31:23 | 11:32:33 | 04:50:27 | Lunar-Solar min. angle 3.884 deg. | | | | 70.184 | 69.900 |
| 10/08/2021 | 10:27:56 | * | F | 17:27:56 | 17:29:06 | 10:47:39 | Lunar perigee 363386 km | | | | 70.184 | 69.901 |
| 10/12/2021 | 20:09:05 | * | Tu | 03:09:05 | 03:10:15 | 20:29:57 | Lunar illum. = 50% | | | | 70.184 | 69.905 |
| 10/12/2021 | 20:25:08 | * | Tu | 03:25:08 | 03:26:18 | 20:45:59 | 1Q Moon | | | | 70.184 | 69.905 |
| 10/19/2021 | 16:56:24 | * | Tu | 23:56:25 | 23:57:35 | 17:18:42 | Mercury Perihelion 0.3075033 au | | | | 70.184 | 69.911 |
| 10/20/2021 | 07:56:41 | * | W | 14:56:41 | 14:57:51 | 08:19:05 | Full Moon at 399419 km | | | | 70.184 | 69.911 |
| 10/20/2021 | 08:27:20 | * | W | 15:27:20 | 15:28:30 | 08:49:45 | Lunar-Solar max. angle 177.057 deg. | | | | 70.184 | 69.911 |
| 10/23/2021 | 15:42:18 | * | Sa | 22:42:18 | 22:43:28 | 16:05:12 | Mercury approx. dichotomy | | | | 70.184 | 69.914 |
| 10/24/2021 | 08:28:14 | * | Su | 15:28:14 | 15:29:24 | 08:51:14 | Lunar apogee 405615 km | | | | 70.184 | 69.914 |
| 10/24/2021 | 22:29:42 | * | Su | 05:29:42 | 05:30:52 | 22:52:45 | Mercury 6.9 arc-sec (-0.6) greatest separation -18.4 (W) | | | | 70.184 | 69.915 |
| 10/28/2021 | 07:38:27 | * | Th | 14:38:27 | 14:39:37 | 08:01:50 | Venus approx. dichotomy | | | | 70.184 | 69.918 |
| 10/28/2021 | 13:05:10 | * | Th | 20:05:10 | 20:06:20 | 13:28:34 | LQ Moon | | | | 70.184 | 69.918 |
| 10/28/2021 | 13:24:34 | * | Th | 20:24:34 | 20:25:44 | 13:47:58 | Lunar illum. = 50% | | | | 70.184 | 69.918 |
| 10/29/2021 | 13:52:01 | * | F | 20:52:01 | 20:53:11 | 14:15:29 | Venus 25.0 arc-sec (-4.5) greatest separation 47.0 (E) | | | | 70.184 | 69.919 |
| 11/04/2021 | 08:05:30 | * | Th | 15:05:31 | 15:06:41 | 08:29:04 | Uranus 3.8 arc-sec (5.6) appears closest 18.7391au | | | | 70.184 | 69.924 |
| 11/04/2021 | 14:14:36 | * | Th | 21:14:36 | 21:15:46 | 14:38:09 | New Moon (Lunation 1223) | | | | 70.184 | 69.924 |
| 11/04/2021 | 14:31:01 | * | Th | 21:31:01 | 21:32:11 | 14:54:35 | Lunar-Solar min. angle 1.718 deg. | | | | 70.184 | 69.924 |
| 11/04/2021 | 16:57:15 | * | Th | 23:57:15 | 23:58:25 | 17:20:48 | Uranus at opposition - mag. 5.6 | | | | 70.184 | 69.924 |
| 11/05/2021 | 15:17:40 | * | F | 22:17:40 | 22:18:50 | 15:41:11 | Lunar perigee 358844 km | | | | 70.184 | 69.925 |
| 11/09/2021 | 21:05:03 | | Tu | 04:05:03 | 04:06:13 | 21:28:17 | Conjunction (RA) of Mercury and Mars | | | | 70.184 | 69.928 |
| 11/10/2021 | 05:56:29 | | W | 12:56:30 | 12:57:39 | 06:19:41 | Conjunction of Mercury and Mars | | | | 70.184 | 69.929 |
| 11/10/2021 | 08:23:24 | | W | 15:23:24 | 15:24:34 | 08:46:35 | Mercury and Mars closest (0.96 deg.) | | | | 70.184 | 69.929 |
| 11/11/2021 | 05:29:05 | | Th | 12:29:05 | 12:30:15 | 05:52:10 | Lunar illum. = 50% | | | | 70.184 | 69.930 |
| 11/11/2021 | 05:46:02 | | Th | 12:46:02 | 12:47:12 | 06:09:07 | 1Q Moon | | | | 70.184 | 69.930 |
| 11/18/2021 | 23:02:25 | | Th | 06:02:26 | 06:03:35 | 23:24:11 | P1-First contact Lunar | h | -64.32 | 63.39 | 70.184 | 69.936 |
| 11/19/2021 | 00:11:52 | | F | 07:11:53 | 07:13:03 | 00:33:38 | P2-Total Penumbral Lunar | f | -64.46 | 63.26 | 70.184 | 69.936 |
| 11/19/2021 | 00:18:18 | | F | 07:18:18 | 07:19:28 | 00:40:03 | U1-begin umbral Lunar | P | -64.06 | 62.86 | 70.184 | 69.936 |
| 11/19/2021 | 01:57:27 | | F | 08:57:27 | 08:58:37 | 02:19:11 | Full Moon at 405300 km | | | | 70.184 | 69.936 |
| 11/19/2021 | 02:02:55 | | F | 09:02:55 | 09:04:05 | 02:24:39 | PARTIAL LUNAR MAXIMUM 99.4% | P | -51.20 | 50.44 | 70.184 | 69.936 |
| 11/19/2021 | 02:02:56 | | F | 09:02:56 | 09:04:06 | 02:24:40 | Lunar-Solar max. angle 179.59 deg. | | | | 70.184 | 69.936 |
| 11/19/2021 | 03:47:30 | | F | 10:47:30 | 10:48:40 | 04:09:13 | U4-Outside umbra | f | -33.22 | 33.05 | 70.184 | 69.936 |
| 11/19/2021 | 03:53:58 | | F | 10:53:58 | 10:55:08 | 04:15:41 | P3-Leaving penumbra | h | -32.06 | 31.94 | 70.184 | 69.936 |
| 11/19/2021 | 05:03:26 | | F | 12:03:26 | 12:04:36 | 05:25:08 | P4-Last contact | | -19.66 | 19.92 | 70.184 | 69.936 |
| 11/20/2021 | 19:12:46 | | Sa | 02:12:47 | 02:13:57 | 19:34:06 | Lunar apogee 406279 km | | | | 70.184 | 69.938 |
| 11/27/2021 | 05:27:40 | | Sa | 12:27:40 | 12:28:50 | 05:47:07 | LQ Moon | | | | 70.184 | 69.943 |
| 11/27/2021 | 05:46:02 | | Sa | 12:46:03 | 12:47:13 | 06:05:30 | Lunar illum. = 50% | | | | 70.184 | 69.943 |
| 12/02/2021 | 16:34:28 | | Th | 23:34:28 | 23:35:38 | 16:51:56 | Mercury Aphelion 0.4666957 au | | | | 70.184 | 69.948 |
| 12/02/2021 | 17:51:32 | | Th | 00:51:32 | 00:52:42 | 18:08:59 | Lunar occultation of Mars op = 159.05E 19.577N | | | | 70.184 | 69.948 |
| 12/03/2021 | 22:29:17 | | F | 05:29:17 | 05:30:27 | 22:46:15 | Start Partial Solar | | -63.42 | -65.14 | 70.184 | 69.949 |
| 12/04/2021 | 00:00:09 | | Sa | 07:00:09 | 07:01:19 | 00:17:06 | Start Total Solar | | -67.91 | -69.06 | 70.184 | 69.949 |
| 12/04/2021 | 00:33:27 | | Sa | 07:33:27 | 07:34:37 | 00:50:23 | TOTAL SOLAR ECLIPSE MID-POINT | | -65.85 | -67.04 | 70.184 | 69.949 |
| 12/04/2021 | 00:33:27 | | Sa | 07:33:27 | 07:34:37 | 00:50:23 | At 46.159W 76.781S magnitude=1.0188 | | | | 70.184 | 69.949 |
| 12/04/2021 | 00:33:27 | | Sa | 07:33:28 | 07:34:38 | 00:50:24 | Lunar-Solar min. angle 0.973 deg. | | | | 70.184 | 69.949 |
| 12/04/2021 | 00:43:01 | | Sa | 07:43:01 | 07:44:11 | 00:59:57 | New Moon (Lunation 1224) | | | | 70.184 | 69.949 |
| 12/04/2021 | 01:06:30 | | Sa | 08:06:31 | 08:07:41 | 01:23:26 | End Total Solar | | -62.24 | -63.61 | 70.184 | 69.949 |

| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/04/2021 | 02:37:27 | | Sa | 09:37:27 | 09:38:37 | 02:54:22 | End Partial Solar | | -48.19 | -50.40 | 70.184 | 69.949 |
| 12/04/2021 | 03:04:07 | | Sa | 10:04:08 | 10:05:18 | 03:21:01 | Lunar perigee 356794 km | | | | 70.184 | 69.949 |
| 12/10/2021 | 18:17:24 | | F | 01:17:24 | 01:18:34 | 18:31:25 | Lunar illum. = 50% | | | | 70.184 | 69.954 |
| 12/10/2021 | 18:35:33 | | F | 01:35:33 | 01:36:43 | 18:49:33 | 1Q Moon | | | | 70.184 | 69.954 |
| 12/17/2021 | 19:15:01 | | F | 02:15:01 | 02:16:11 | 19:25:40 | Lunar apogee 406320 km | | | | 70.184 | 69.959 |
| 12/18/2021 | 21:08:15 | | Sa | 04:08:15 | 04:09:25 | 21:18:23 | Lunar-Solar max. angle 177.724 deg. | | | | 70.184 | 69.960 |
| 12/18/2021 | 21:35:30 | | Sa | 04:35:30 | 04:36:40 | 21:45:37 | Full Moon at 405935 km | | | | 70.184 | 69.960 |
| 12/21/2021 | 08:59:17 | | Tu | 15:59:17 | 16:00:27 | 09:08:10 | DECEMBER SOLSTICE declination = -23.4375 | | | | 70.184 | 69.962 |
| 12/26/2021 | 19:23:44 | | Su | 02:23:45 | 02:24:55 | 19:29:57 | LQ Moon | | | | 70.184 | 69.966 |
| 12/26/2021 | 19:41:05 | | Su | 02:41:06 | 02:42:16 | 19:47:17 | Lunar illum. = 50% | | | | 70.184 | 69.966 |
| 12/28/2021 | 18:03:52 | | Tu | 01:03:52 | 01:05:02 | 18:09:07 | Conjunction (RA) of Mercury and Venus | | | | 70.184 | 69.968 |
| 12/28/2021 | 21:51:41 | | Tu | 04:51:42 | 04:52:52 | 21:56:52 | Mercury and Venus closest (4.22 deg.) | | | | 70.184 | 69.968 |
| 12/29/2021 | 03:27:27 | | W | 10:27:27 | 10:28:37 | 03:32:30 | Conjunction of Mercury and Venus | | | | 70.184 | 69.968 |
| 12/31/2021 | 12:52:15 | | F | 19:52:15 | 19:53:25 | 12:56:09 | Lunar occultation of Mars op = 132.582E 78.487S | | | | 70.184 | 69.970 |
| 01/01/2022 | 15:55:32 | | Sa | 22:55:32 | 22:56:42 | 15:58:54 | Lunar perigee 358033 km | | | | 70.184 | 69.971 |
| 01/02/2022 | 11:08:14 | | Su | 18:08:15 | 18:09:25 | 11:11:15 | Lunar-Solar min. angle 3.401 deg. | | | | 70.184 | 69.971 |
| 01/02/2022 | 11:33:29 | | Su | 18:33:30 | 18:34:40 | 11:36:29 | New Moon (Lunation 1225) | | | | 70.184 | 69.971 |
| 01/03/2022 | 23:54:22 | | M | 06:54:22 | 06:55:32 | 23:56:40 | Earth Perihelion 0.9833365 au | | | | 70.184 | 69.972 |
| 01/07/2022 | 04:03:42 | | F | 11:03:42 | 11:04:52 | 04:04:35 | Mercury 6.8 arc-sec (-0.6) greatest separation 19.2 (E) | | | | 70.184 | 69.975 |
| 01/09/2022 | 06:24:18 | | Su | 13:24:18 | 13:25:28 | 06:24:18 | Mercury approx. dichotomy | | | | 70.184 | 69.976 |
| 01/09/2022 | 10:51:50 | | Su | 17:51:50 | 17:53:00 | 10:51:46 | Lunar illum. = 50% | | | | 70.184 | 69.976 |
| 01/09/2022 | 11:11:16 | | Su | 18:11:16 | 18:12:26 | 11:11:11 | 1Q Moon | | | | 70.184 | 69.976 |
| 01/14/2022 | 02:25:59 | | F | 09:25:59 | 09:27:09 | 02:24:07 | Lunar apogee 405805 km | | | | 70.184 | 69.980 |
| 01/15/2022 | 16:12:36 | | Sa | 23:12:36 | 23:13:46 | 16:10:11 | Mercury Perihelion 0.3075025 au | | | | 70.184 | 69.981 |
| 01/17/2022 | 16:19:45 | | M | 23:19:45 | 23:20:55 | 16:16:40 | Lunar-Solar max. angle 175.714 deg. | | | | 70.184 | 69.983 |
| 01/17/2022 | 16:48:25 | | M | 23:48:26 | 23:49:36 | 16:45:20 | Full Moon at 401024 km | | | | 70.184 | 69.983 |
| 01/22/2022 | 22:47:31 | | Sa | 05:47:31 | 05:48:41 | 22:42:54 | Venus Perihelion 0.7184435 au | | | | 70.184 | 69.987 |
| 01/25/2022 | 06:40:54 | | Tu | 13:40:55 | 13:42:05 | 06:35:44 | LQ Moon | | | | 70.184 | 69.989 |
| 01/25/2022 | 06:57:24 | | Tu | 13:57:24 | 13:58:34 | 06:52:14 | Lunar illum. = 50% | | | | 70.184 | 69.989 |
| 01/30/2022 | 00:11:02 | | Su | 07:11:03 | 07:12:13 | 00:04:57 | Lunar perigee 362252 km | | | | 70.184 | 69.992 |
| 01/31/2022 | 22:32:25 | | M | 05:32:25 | 05:33:35 | 22:26:02 | Lunar-Solar min. angle 4.82 deg. | | | | 70.184 | 69.994 |
| 01/31/2022 | 22:46:00 | | M | 05:46:01 | 05:47:11 | 22:39:38 | New Moon (Lunation 1226) | | | | 70.184 | 69.994 |
| 02/08/2022 | 06:29:40 | | Tu | 13:29:41 | 13:30:51 | 06:22:40 | Lunar illum. = 50% | | | | 70.184 | 70.000 |
| 02/08/2022 | 06:50:06 | | Tu | 13:50:07 | 13:51:17 | 06:43:06 | 1Q Moon | | | | 70.184 | 70.000 |
| 02/10/2022 | 19:37:11 | | Th | 02:37:11 | 02:38:21 | 19:30:07 | Lunar apogee 404897 km | | | | 70.184 | 70.002 |
| 02/11/2022 | 09:06:34 | | F | 16:06:34 | 16:07:44 | 08:59:30 | Mercury approx. dichotomy | | | | 70.184 | 70.003 |
| 02/16/2022 | 09:56:30 | | W | 16:56:31 | 16:57:41 | 09:49:37 | Full Moon at 391888 km | | | | 70.184 | 70.007 |
| 02/16/2022 | 09:57:33 | | W | 16:57:33 | 16:58:43 | 09:50:40 | Lunar-Solar max. angle 175.006 deg. | | | | 70.184 | 70.007 |
| 02/16/2022 | 14:06:49 | | W | 21:06:49 | 21:07:59 | 13:59:57 | Mercury 6.9 arc-sec (0.0) greatest separation -26.3 (W) | | | | 70.184 | 70.007 |
| 02/23/2022 | 15:32:26 | | W | 22:32:26 | 22:33:36 | 15:26:19 | LQ Moon | | | | 70.184 | 70.013 |
| 02/23/2022 | 15:48:19 | | W | 22:48:19 | 22:49:29 | 15:42:12 | Lunar illum. = 50% | | | | 70.184 | 70.013 |
| 02/26/2022 | 15:25:07 | | Sa | 22:25:07 | 22:26:17 | 15:19:28 | Lunar perigee 367789 km | | | | 70.184 | 70.016 |
| 02/28/2022 | 15:49:54 | | M | 22:49:55 | 22:51:05 | 15:44:37 | Mercury Aphelion 0.4666955 au | | | | 70.184 | 70.017 |
| 03/02/2022 | 05:33:51 | | W | 12:33:51 | 12:35:01 | 05:28:52 | Conjunction (RA) of Mercury and Saturn | | | | 70.184 | 70.019 |
| 03/02/2022 | 08:40:05 | | W | 15:40:05 | 15:41:15 | 08:35:08 | Mercury and Saturn closest (0.67 deg.) | | | | 70.184 | 70.019 |
| 03/02/2022 | 09:32:40 | | W | 16:32:40 | 16:33:50 | 09:27:43 | Conjunction of Mercury and Saturn | | | | 70.184 | 70.019 |
| 03/02/2022 | 10:34:46 | | W | 17:34:46 | 17:35:56 | 10:29:50 | New Moon (Lunation 1227) | | | | 70.184 | 70.019 |
| 03/02/2022 | 10:49:24 | | W | 17:49:24 | 17:50:34 | 10:44:28 | Lunar-Solar min. angle 4.808 deg. | | | | 70.184 | 70.019 |
| 03/10/2022 | 03:24:37 | | Th | 10:24:37 | 10:25:47 | 03:21:28 | Lunar illum. = 50% | | | | 70.184 | 70.026 |
| 03/10/2022 | 03:45:23 | | Th | 10:45:24 | 10:46:34 | 03:42:15 | 1Q Moon | | | | 70.184 | 70.026 |
| 03/10/2022 | 16:03:40 | | Th | 23:03:40 | 23:04:50 | 16:00:39 | Lunar apogee 404268 km | | | | 70.184 | 70.027 |
| 03/18/2022 | 00:17:34 | * | F | 07:17:34 | 07:18:44 | 00:16:35 | Full Moon at 380831 km | | | | 70.184 | 70.033 |
| 03/18/2022 | 00:43:33 | * | F | 07:43:33 | 07:44:43 | 00:42:34 | Lunar-Solar max. angle 175.775 deg. | | | | 70.184 | 70.033 |
| 03/20/2022 | 02:24:59 | * | Su | 09:24:59 | 09:26:09 | 02:24:37 | Venus 24.6 arc-sec (-4.5) greatest separation -46.6 (W) | | | | 70.184 | 70.035 |
| 03/20/2022 | 08:33:20 | * | Su | 15:33:20 | 15:34:30 | 08:33:03 | Solar declination = zero | | | | 70.184 | 70.036 |
| 03/20/2022 | 08:33:23 | * | Su | 15:33:24 | 15:34:34 | 08:33:06 | MARCH EQUINOX declination = 0.06 arc-sec | | | | 70.184 | 70.036 |
| 03/20/2022 | 15:17:01 | * | Su | 22:17:01 | 22:18:11 | 15:16:49 | Conjunction (RA) of Mercury and Jupiter | | | | 70.184 | 70.036 |
| 03/20/2022 | 22:55:08 | * | Su | 05:55:09 | 05:56:19 | 22:55:02 | Venus approx. dichotomy | | | | 70.184 | 70.036 |
| 03/20/2022 | 23:06:20 | * | Su | 06:06:20 | 06:07:30 | 23:06:13 | Conjunction of Mercury and Jupiter | | | | 70.184 | 70.036 |
| 03/20/2022 | 23:32:02 | * | Su | 06:32:02 | 06:33:12 | 23:31:55 | Mercury and Jupiter closest (1.17 deg.) | | | | 70.184 | 70.036 |
| 03/23/2022 | 16:37:23 | * | W | 23:37:23 | 23:38:33 | 16:38:06 | Lunar perigee 369760 km | | | | 70.184 | 70.039 |
| 03/24/2022 | 22:37:16 | * | Th | 05:37:16 | 05:38:26 | 22:38:21 | LQ Moon | | | | 70.184 | 70.040 |
| 03/24/2022 | 22:52:52 | * | Th | 05:52:52 | 05:54:02 | 22:53:57 | Lunar illum. = 50% | | | | 70.184 | 70.040 |
| 03/28/2022 | 12:27:22 | * | M | 19:27:22 | 19:28:32 | 12:29:32 | Conjunction of Venus and Saturn | | | | 70.184 | 70.043 |
| 03/28/2022 | 17:50:59 | * | M | 00:50:59 | 00:52:09 | 17:53:13 | Venus and Saturn closest (2.1 deg.) | | | | 70.184 | 70.043 |
| 03/29/2022 | 06:12:16 | * | Tu | 13:12:16 | 13:13:26 | 06:14:39 | Conjunction (RA) of Venus and Saturn | | | | 70.184 | 70.044 |
| 03/31/2022 | 23:24:24 | * | Th | 06:24:24 | 06:25:34 | 23:27:36 | New Moon (Lunation 1228) | | | | 70.184 | 70.047 |
| 03/31/2022 | 23:54:01 | * | Th | 06:54:01 | 06:55:11 | 23:57:13 | Lunar-Solar min. angle 3.415 deg. | | | | 70.184 | 70.047 |
| 04/03/2022 | 19:58:23 | * | Su | 02:58:23 | 02:59:33 | 20:02:24 | Earth at 1.0 au | | | | 70.184 | 70.049 |

| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 04/04/2022 | 15:04:35 | * | M | 22:04:35 | 22:05:45 | 15:08:51 | Conjunction (RA) of Mars and Saturn | | | | 70.184 | 70.050 |
| 04/04/2022 | 18:42:22 | * | M | 01:42:23 | 01:43:33 | 18:46:41 | Mars and Saturn closest (0.31 deg.) | | | | 70.184 | 70.050 |
| 04/04/2022 | 18:51:20 | * | M | 01:51:20 | 01:52:31 | 18:55:39 | Conjunction of Mars and Saturn | | | | 70.184 | 70.050 |
| 04/07/2022 | 12:10:50 | * | Th | 19:10:50 | 19:12:00 | 12:15:54 | Lunar apogee 404438 km | | | | 70.184 | 70.053 |
| 04/08/2022 | 23:27:16 | * | F | 06:27:16 | 06:28:26 | 23:32:45 | Lunar illum. = 50% | | | | 70.184 | 70.054 |
| 04/08/2022 | 23:47:37 | * | F | 06:47:37 | 06:48:47 | 23:53:06 | 1Q Moon | | | | 70.184 | 70.054 |
| 04/13/2022 | 15:27:24 | * | W | 22:27:24 | 22:28:34 | 15:34:06 | Mercury Perihelion 0.3075015 au | | | | 70.184 | 70.059 |
| 04/16/2022 | 11:55:02 | * | Sa | 18:55:02 | 18:56:12 | 12:02:26 | Full Moon at 370265 km | | | | 70.184 | 70.061 |
| 04/16/2022 | 12:16:54 | * | Sa | 19:16:55 | 19:18:05 | 12:24:18 | Lunar-Solar max. angle 177.723 deg. | | | | 70.184 | 70.061 |
| 04/19/2022 | 08:13:29 | * | Tu | 15:13:29 | 15:14:39 | 08:21:30 | Lunar perigee 365143 km | | | | 70.184 | 70.064 |
| 04/23/2022 | 04:56:21 | * | Sa | 11:56:21 | 11:57:31 | 05:05:09 | LQ Moon | | | | 70.184 | 70.068 |
| 04/23/2022 | 05:12:01 | * | Sa | 12:12:01 | 12:13:11 | 05:20:50 | Lunar illum. = 50% | | | | 70.184 | 70.068 |
| 04/25/2022 | 03:39:26 | * | M | 10:39:26 | 10:40:36 | 03:48:35 | Mercury approx. dichotomy | | | | 70.184 | 70.069 |
| 04/29/2022 | 01:09:00 | * | F | 08:09:00 | 08:10:10 | 01:18:44 | Mercury 7.9 arc-sec (0.2) greatest separation 20.6 (E) | | | | 70.184 | 70.073 |
| 04/30/2022 | 11:42:11 | * | Sa | 18:42:11 | 18:43:21 | 11:52:07 | Conjunction (RA) of Venus and Jupiter | | | | 70.184 | 70.075 |
| 04/30/2022 | 11:45:21 | * | Sa | 18:45:21 | 18:46:31 | 11:55:17 | Start Partial Solar | | 60.85 | 59.01 | 70.184 | 70.075 |
| 04/30/2022 | 13:28:05 | * | Sa | 20:28:05 | 20:29:15 | 13:38:01 | New Moon (Lunation 1229) | | | | 70.184 | 70.075 |
| 04/30/2022 | 13:41:32 | * | Sa | 20:41:32 | 20:42:42 | 13:51:28 | PARTIAL SOLAR ECLIPSE MID-POINT | | 52.49 | 51.32 | 70.184 | 70.075 |
| 04/30/2022 | 13:41:32 | * | Sa | 20:41:32 | 20:42:42 | 13:51:28 | At 69.25W 62.868S magnitude=0.6393 | | | | 70.184 | 70.075 |
| 04/30/2022 | 13:41:32 | * | Sa | 20:41:32 | 20:42:42 | 13:51:28 | SOLAR ECLIPSE MAXIMUM 54.1% | | 52.49 | 51.32 | 70.184 | 70.075 |
| 04/30/2022 | 13:41:32 | * | Sa | 20:41:32 | 20:42:42 | 13:51:28 | At 69.248W 62.865S magnitude=0.6393 | | | | 70.184 | 70.075 |
| 04/30/2022 | 13:41:32 | * | Sa | 20:41:33 | 20:42:43 | 13:51:29 | Lunar-Solar min. angle 1.094 deg. | | | | 70.184 | 70.075 |
| 04/30/2022 | 13:56:19 | * | Sa | 20:56:19 | 20:57:29 | 14:06:15 | Venus and Jupiter closest (0.23 deg.) | | | | 70.184 | 70.075 |
| 04/30/2022 | 14:13:59 | * | Sa | 21:13:59 | 21:15:09 | 14:23:55 | Conjunction of Venus and Jupiter | | | | 70.184 | 70.075 |
| 04/30/2022 | 15:37:59 | * | Sa | 22:37:59 | 22:39:09 | 15:47:56 | End Partial Solar | | 33.94 | 33.68 | 70.184 | 70.075 |
| 05/05/2022 | 05:46:05 | * | Th | 12:46:05 | 12:47:15 | 05:56:30 | Lunar apogee 405285 km | | | | 70.184 | 70.078 |
| 05/08/2022 | 17:02:00 | * | Su | 00:02:00 | 00:03:10 | 17:12:38 | Lunar illum. = 50% | | | | 70.184 | 70.081 |
| 05/08/2022 | 17:21:23 | * | Su | 00:21:23 | 00:22:33 | 17:32:01 | 1Q Moon | | | | 70.184 | 70.081 |
| 05/15/2022 | 03:33:22 | * | Su | 10:33:22 | 10:34:32 | 03:44:08 | Venus Aphelion 0.7282155 au | | | | 70.184 | 70.087 |
| 05/15/2022 | 18:32:16 | * | Su | 01:32:16 | 01:33:26 | 18:43:01 | P1-First contact Lunar | | 5.91 | -5.52 | 70.184 | 70.087 |
| 05/15/2022 | 19:27:34 | * | Su | 02:27:34 | 02:28:44 | 19:38:19 | U1-begin umbral Lunar | P | -2.70 | 3.13 | 70.184 | 70.087 |
| 05/15/2022 | 20:28:41 | * | Su | 03:28:41 | 03:29:51 | 20:39:26 | U2-begin total Lunar | T | -12.05 | 11.26 | 70.184 | 70.087 |
| 05/15/2022 | 21:11:31 | * | Su | 04:11:31 | 04:12:41 | 21:22:15 | TOTAL LUNAR MID-POINT | T | -17.31 | 16.18 | 70.184 | 70.087 |
| 05/15/2022 | 21:11:31 | * | Su | 04:11:32 | 04:12:42 | 21:22:16 | Lunar-Solar max. angle 179.744 deg. | | | | 70.184 | 70.087 |
| 05/15/2022 | 21:14:08 | * | Su | 04:14:09 | 04:15:19 | 21:24:53 | Full Moon at 362127 km | | | | 70.184 | 70.087 |
| 05/15/2022 | 21:54:22 | * | Su | 04:54:22 | 04:55:32 | 22:05:06 | U3-Totality ends | P | -21.61 | 20.21 | 70.184 | 70.087 |
| 05/15/2022 | 22:55:29 | * | Su | 05:55:29 | 05:56:39 | 23:06:14 | U4-Outside umbra | h | -25.66 | 24.02 | 70.184 | 70.087 |
| 05/15/2022 | 23:50:42 | * | Su | 06:50:42 | 06:51:52 | 00:01:27 | P4-Last contact | | -26.83 | 25.17 | 70.184 | 70.087 |
| 05/17/2022 | 08:27:04 | * | Tu | 15:27:04 | 15:28:14 | 08:37:47 | Lunar perigee 360298 km | | | | 70.184 | 70.088 |
| 05/22/2022 | 11:43:06 | * | Su | 18:43:06 | 18:44:16 | 11:53:31 | LQ Moon | | | | 70.184 | 70.093 |
| 05/22/2022 | 11:59:14 | * | Su | 18:59:15 | 19:00:25 | 12:09:40 | Lunar illum. = 50% | | | | 70.184 | 70.093 |
| 05/26/2022 | 20:02:35 | * | Th | 03:02:35 | 03:03:45 | 20:12:35 | Lunar occultation of Venus op = 101.642E 1.218S | | | | 70.184 | 70.096 |
| 05/27/2022 | 15:05:14 | * | F | 22:05:14 | 22:06:25 | 15:15:08 | Mercury Aphelion 0.4666959 au | | | | 70.184 | 70.097 |
| 05/28/2022 | 17:04:01 | * | Sa | 00:04:01 | 00:05:11 | 17:13:47 | Conjunction (RA) of Mars and Jupiter | | | | 70.184 | 70.098 |
| 05/29/2022 | 03:26:38 | * | Su | 10:26:38 | 10:27:48 | 03:36:20 | Mars and Jupiter closest (0.58 deg.) | | | | 70.184 | 70.098 |
| 05/29/2022 | 03:30:47 | * | Su | 10:30:47 | 10:31:57 | 03:40:30 | Conjunction of Mars and Jupiter | | | | 70.184 | 70.098 |
| 05/30/2022 | 04:11:35 | * | M | 11:11:35 | 11:12:45 | 04:21:08 | Lunar-Solar min. angle 1.492 deg. | | | | 70.184 | 70.099 |
| 05/30/2022 | 04:30:16 | * | M | 11:30:17 | 11:31:27 | 04:39:50 | New Moon (Lunation 1230) | | | | 70.184 | 70.099 |
| 06/01/2022 | 18:13:22 | * | W | 01:13:22 | 01:14:32 | 18:22:32 | Lunar apogee 406192 km | | | | 70.184 | 70.101 |
| 06/07/2022 | 07:30:16 | * | Tu | 14:30:16 | 14:31:26 | 07:38:28 | Lunar illum. = 50% | | | | 70.184 | 70.103 |
| 06/07/2022 | 07:48:30 | * | Tu | 14:48:30 | 14:49:40 | 07:56:42 | 1Q Moon | | | | 70.184 | 70.103 |
| 06/14/2022 | 04:29:10 | * | Tu | 11:29:10 | 11:30:20 | 04:35:59 | Lunar-Solar max. angle 177.309 deg. | | | | 70.184 | 70.106 |
| 06/14/2022 | 04:51:45 | * | Tu | 11:51:45 | 11:52:55 | 04:58:34 | Full Moon at 357656 km | | | | 70.184 | 70.106 |
| 06/14/2022 | 16:23:28 | * | Tu | 23:23:28 | 23:24:38 | 16:30:11 | Lunar perigee 357432 km | | | | 70.184 | 70.106 |
| 06/16/2022 | 07:55:33 | * | Th | 14:55:33 | 14:56:43 | 08:01:55 | Mercury 8.2 arc-sec (0.4) greatest separation -23.2 (W) | | | | 70.184 | 70.107 |
| 06/20/2022 | 20:10:49 | * | M | 03:10:49 | 03:11:59 | 20:16:12 | LQ Moon | | | | 70.184 | 70.109 |
| 06/20/2022 | 20:27:49 | * | M | 03:27:49 | 03:28:59 | 20:33:12 | Lunar illum. = 50% | | | | 70.184 | 70.109 |
| 06/21/2022 | 02:13:49 | * | Tu | 09:13:49 | 09:15:00 | 02:19:10 | JUNE SOLSTICE declination = 23.4378 | | | | 70.184 | 70.109 |
| 06/21/2022 | 06:06:20 | * | Tu | 13:06:20 | 13:07:30 | 06:11:38 | Mars Perihelion 1.3813044 au | | | | 70.184 | 70.109 |
| 06/22/2022 | 03:43:30 | * | W | 10:43:31 | 10:44:41 | 03:48:37 | Mercury approx. dichotomy | | | | 70.184 | 70.109 |
| 06/22/2022 | 12:06:54 | * | W | 19:06:54 | 19:08:04 | 12:11:55 | Lunar occultation of Mars op = 138.822W 49.448S | | | | 70.184 | 70.110 |
| 06/28/2022 | 19:19:08 | * | Tu | 02:19:08 | 02:20:18 | 19:22:49 | Lunar-Solar min. angle 3.663 deg. | | | | 70.184 | 70.112 |
| 06/28/2022 | 19:52:16 | * | Tu | 02:52:16 | 02:53:26 | 19:55:57 | New Moon (Lunation 1231) | | | | 70.184 | 70.112 |
| 06/28/2022 | 23:08:06 | * | Tu | 06:08:06 | 06:09:16 | 23:11:46 | Lunar apogee 406580 km | | | | 70.184 | 70.112 |
| 07/04/2022 | 00:10:23 | * | M | 07:10:23 | 07:11:33 | 00:13:04 | Earth Aphelion 1.0167154 au | | | | 70.184 | 70.118 |
| 07/06/2022 | 18:57:01 | * | W | 01:57:01 | 01:58:11 | 18:59:14 | Lunar illum. = 50% | | | | 70.184 | 70.123 |
| 07/06/2022 | 19:14:09 | * | W | 02:14:09 | 02:15:19 | 19:16:22 | 1Q Moon | | | | 70.184 | 70.123 |
| 07/10/2022 | 14:42:45 | * | Su | 21:42:45 | 21:43:55 | 14:44:24 | Mercury Perihelion 0.3075016 au | | | | 70.184 | 70.129 |
| 07/13/2022 | 02:05:33 | * | W | 09:05:33 | 09:06:43 | 02:06:53 | Lunar perigee 357264 km | | | | 70.184 | 70.132 |

| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 07/13/2022 | 11:17:01 | * | W | 18:17:01 | 18:18:11 | 11:18:18 | Lunar-Solar max. angle 175.582 deg. | | | | 70.184 | 70.133 |
| 07/13/2022 | 11:37:37 | * | W | 18:37:37 | 18:38:48 | 11:38:55 | Full Moon at 357418 km | | | | 70.184 | 70.133 |
| 07/17/2022 | 06:05:58 | * | Su | 13:05:58 | 13:07:08 | 06:06:53 | Pluto 0.1 arc-sec (14.4) appears closest 33.5506au | | | | 70.184 | 70.139 |
| 07/19/2022 | 18:38:29 | * | Tu | 01:38:29 | 01:39:40 | 18:39:14 | Pluto at opposition - mag. 14.4 | | | | 70.184 | 70.143 |
| 07/20/2022 | 07:18:37 | * | W | 14:18:37 | 14:19:47 | 07:19:20 | LQ Moon | | | | 70.184 | 70.144 |
| 07/20/2022 | 07:36:44 | * | W | 14:36:44 | 14:37:54 | 07:37:27 | Lunar illum. = 50% | | | | 70.184 | 70.144 |
| 07/21/2022 | 08:55:12 | * | Th | 15:55:12 | 15:56:22 | 08:55:52 | Lunar occultation of Mars op = 100.34E 62.871N | | | | 70.184 | 70.146 |
| 07/26/2022 | 03:21:51 | * | Tu | 10:21:51 | 10:23:02 | 03:22:25 | Lunar apogee 406274 km | | | | 70.184 | 70.153 |
| 07/28/2022 | 10:40:41 | * | Th | 17:40:41 | 17:41:51 | 10:41:16 | Lunar-Solar min. angle 4.864 deg. | | | | 70.184 | 70.157 |
| 07/28/2022 | 10:55:01 | * | Th | 17:55:01 | 17:56:11 | 10:55:37 | New Moon (Lunation 1232) | | | | 70.184 | 70.157 |
| 08/05/2022 | 03:50:17 | * | F | 10:50:17 | 10:51:27 | 03:51:22 | Lunar illum. = 50% | | | | 70.184 | 70.169 |
| 08/05/2022 | 04:06:33 | * | F | 11:06:33 | 11:07:43 | 04:07:38 | 1Q Moon | | | | 70.184 | 70.169 |
| 08/10/2022 | 10:08:50 | * | W | 17:08:50 | 17:10:00 | 10:10:36 | Lunar perigee 359828 km | | | | 70.184 | 70.177 |
| 08/11/2022 | 18:35:44 | * | Th | 01:35:44 | 01:36:54 | 18:37:43 | Full Moon at 361412 km | | | | 70.184 | 70.179 |
| 08/11/2022 | 18:37:03 | * | Th | 01:37:03 | 01:38:14 | 18:39:03 | Lunar-Solar max. angle 174.998 deg. | | | | 70.184 | 70.179 |
| 08/14/2022 | 10:10:38 | * | Su | 17:10:38 | 17:11:48 | 10:13:06 | Saturn at opposition - mag. 0.3 | | | | 70.184 | 70.183 |
| 08/14/2022 | 14:47:01 | * | Su | 21:47:01 | 21:48:11 | 14:49:31 | Saturn 18.8 arc-sec (0.3) appears closest 8.85684au | | | | 70.184 | 70.184 |
| 08/18/2022 | 21:36:05 | * | Th | 04:36:05 | 04:37:16 | 21:39:30 | LQ Moon | | | | 70.184 | 70.190 |
| 08/18/2022 | 21:55:23 | * | Th | 04:55:23 | 04:56:34 | 21:58:49 | Lunar illum. = 50% | | | | 70.184 | 70.190 |
| 08/22/2022 | 14:52:20 | * | M | 21:52:20 | 21:53:30 | 14:56:40 | Lunar apogee 405418 km | | | | 70.184 | 70.196 |
| 08/23/2022 | 14:20:39 | * | Tu | 21:20:39 | 21:21:49 | 14:25:14 | Mercury Aphelion 0.4666959 au | | | | 70.184 | 70.198 |
| 08/27/2022 | 01:17:07 | * | Sa | 08:17:07 | 08:18:17 | 01:22:39 | New Moon (Lunation 1233) | | | | 70.184 | 70.203 |
| 08/27/2022 | 01:34:46 | * | Sa | 08:34:46 | 08:35:56 | 01:40:19 | Lunar-Solar min. angle 4.773 deg. | | | | 70.184 | 70.203 |
| 08/27/2022 | 09:14:20 | * | Sa | 16:14:20 | 16:15:30 | 09:19:58 | Mercury 7.2 arc-sec (0.2) greatest separation 27.3 (E) | | | | 70.184 | 70.204 |
| 08/29/2022 | 09:35:37 | * | M | 16:35:37 | 16:36:47 | 09:41:50 | Mercury approx. dichotomy | | | | 70.184 | 70.207 |
| 09/03/2022 | 10:52:01 | * | Sa | 17:52:01 | 17:53:12 | 10:59:51 | Lunar illum. = 50% | | | | 70.184 | 70.215 |
| 09/03/2022 | 11:07:44 | * | Sa | 18:07:43 | 18:08:54 | 11:15:33 | 1Q Moon | | | | 70.184 | 70.215 |
| 09/04/2022 | 13:20:03 | * | Su | 20:20:02 | 20:21:13 | 13:28:14 | Venus Perihelion 0.7184446 au | | | | 70.184 | 70.217 |
| 09/07/2022 | 11:18:36 | * | W | 18:18:36 | 18:19:46 | 11:27:47 | Lunar perigee 364492 km | | | | 70.184 | 70.221 |
| 09/10/2022 | 02:59:03 | * | Sa | 09:59:03 | 10:00:13 | 03:09:09 | Full Moon at 369131 km | | | | 70.184 | 70.225 |
| 09/10/2022 | 03:22:46 | * | Sa | 10:22:46 | 10:23:57 | 03:32:53 | Lunar-Solar max. angle 175.732 deg. | | | | 70.184 | 70.225 |
| 09/15/2022 | 19:33:53 | * | Th | 02:33:53 | 02:35:03 | 19:46:01 | Neptune 2.4 arc-sec (7.8) appears closest 28.9097au | | | | 70.184 | 70.234 |
| 09/16/2022 | 15:21:25 | * | F | 22:21:25 | 22:22:35 | 15:33:51 | Neptune at opposition - mag. 7.8 | | | | 70.184 | 70.236 |
| 09/17/2022 | 14:51:59 | * | Sa | 21:51:59 | 21:53:09 | 15:04:46 | LQ Moon | | | | 70.184 | 70.237 |
| 09/17/2022 | 15:12:13 | * | Sa | 22:12:13 | 22:13:23 | 15:25:00 | Lunar illum. = 50% | | | | 70.184 | 70.237 |
| 09/19/2022 | 07:43:26 | * | M | 14:43:25 | 14:44:36 | 07:56:49 | Lunar apogee 404556 km | | | | 70.184 | 70.240 |
| 09/22/2022 | 18:03:40 | * | Th | 01:03:40 | 01:04:51 | 18:18:16 | SEPTEMBER EQUINOX declination = 0.67 arc-sec | | | | 70.184 | 70.245 |
| 09/22/2022 | 18:04:22 | * | Th | 01:04:22 | 01:05:32 | 18:18:58 | Solar declination = zero | | | | 70.184 | 70.245 |
| 09/25/2022 | 14:54:33 | * | Su | 21:54:33 | 21:55:43 | 15:10:09 | New Moon (Lunation 1234) | | | | 70.184 | 70.250 |
| 09/25/2022 | 15:24:18 | * | Su | 22:24:18 | 22:25:28 | 15:39:54 | Lunar-Solar min. angle 3.385 deg. | | | | 70.184 | 70.250 |
| 09/25/2022 | 18:14:02 | * | Su | 01:14:01 | 01:15:12 | 18:29:40 | Conjunction (RA) of Mercury and Venus | | | | 70.184 | 70.250 |
| 09/25/2022 | 19:13:48 | * | Su | 02:13:48 | 02:14:58 | 19:29:28 | Jupiter 49.9 arc-sec (-2.9) appears closest 3.952565au | | | | 70.184 | 70.250 |
| 09/26/2022 | 10:58:49 | * | M | 17:58:49 | 17:59:59 | 11:14:42 | Conjunction of Mercury and Venus | | | | 70.184 | 70.251 |
| 09/26/2022 | 12:33:11 | * | M | 19:33:10 | 19:34:21 | 12:49:05 | Jupiter at opposition - mag. -2.9 | | | | 70.184 | 70.251 |
| 09/26/2022 | 16:49:16 | * | M | 23:49:16 | 23:50:26 | 17:05:14 | Mercury and Venus closest (3.18 deg.) | | | | 70.184 | 70.252 |
| 10/02/2022 | 16:58:32 | * | Su | 23:58:32 | 23:59:42 | 17:16:28 | Lunar illum. = 50% | | | | 70.184 | 70.261 |
| 10/02/2022 | 17:14:02 | * | Su | 00:14:02 | 00:15:13 | 17:31:59 | 1Q Moon | | | | 70.184 | 70.261 |
| 10/04/2022 | 09:33:43 | * | Tu | 16:33:43 | 16:34:53 | 09:52:10 | Lunar perigee 369325 km | | | | 70.184 | 70.264 |
| 10/05/2022 | 09:25:22 | * | W | 16:25:22 | 16:26:32 | 09:44:08 | Earth at 1.0 au | | | | 70.184 | 70.265 |
| 10/06/2022 | 13:58:27 | * | Th | 20:58:27 | 20:59:37 | 14:17:34 | Mercury Perihelion 0.3075029 au | | | | 70.184 | 70.267 |
| 10/08/2022 | 01:54:35 | * | Sa | 08:54:35 | 08:55:45 | 02:14:07 | Mercury approx. dichotomy | | | | 70.184 | 70.270 |
| 10/08/2022 | 14:13:30 | * | Sa | 21:13:30 | 21:14:40 | 14:33:11 | Mercury 7.0 arc-sec (-0.6) greatest separation -18.0 (W) | | | | 70.184 | 70.270 |
| 10/09/2022 | 13:54:58 | * | Su | 20:54:58 | 20:56:08 | 14:14:56 | Full Moon at 379483 km | | | | 70.184 | 70.272 |
| 10/09/2022 | 14:18:43 | * | Su | 21:18:43 | 21:19:53 | 14:38:41 | Lunar-Solar max. angle 177.638 deg. | | | | 70.184 | 70.272 |
| 10/17/2022 | 03:20:20 | * | M | 10:20:20 | 10:21:30 | 03:42:06 | Lunar apogee 404328 km | | | | 70.184 | 70.284 |
| 10/17/2022 | 10:15:06 | * | M | 17:15:06 | 17:16:16 | 10:36:56 | LQ Moon | | | | 70.184 | 70.284 |
| 10/17/2022 | 10:35:45 | * | M | 17:35:44 | 17:36:55 | 10:57:34 | Lunar illum. = 50% | | | | 70.184 | 70.284 |
| 10/25/2022 | 01:58:21 | * | Tu | 08:58:21 | 08:59:31 | 02:21:23 | Start Partial Solar | | -46.00 | -45.25 | 70.184 | 70.296 |
| 10/25/2022 | 03:48:42 | * | Tu | 10:48:41 | 10:49:52 | 04:11:44 | New Moon (Lunation 1235) | | | | 70.184 | 70.296 |
| 10/25/2022 | 04:00:03 | * | Tu | 11:00:03 | 11:01:13 | 04:23:06 | PARTIAL SOLAR ECLIPSE MID-POINT | | -25.81 | -26.37 | 70.184 | 70.297 |
| 10/25/2022 | 04:00:03 | * | Tu | 11:00:03 | 11:01:13 | 04:23:06 | At 79.772E 62.379N magnitude=0.8617 | | | | 70.184 | 70.297 |
| 10/25/2022 | 04:00:04 | * | Tu | 11:00:03 | 11:01:14 | 04:23:07 | SOLAR ECLIPSE MAXIMUM 82.1% | | -25.81 | -26.36 | 70.184 | 70.297 |
| 10/25/2022 | 04:00:04 | * | Tu | 11:00:03 | 11:01:14 | 04:23:07 | At 79.773E 62.376N magnitude=0.8617 | | | | 70.184 | 70.297 |
| 10/25/2022 | 04:00:04 | * | Tu | 11:00:04 | 11:01:14 | 04:23:07 | Lunar-Solar min. angle 1.037 deg. | | | | 70.184 | 70.297 |
| 10/25/2022 | 06:02:15 | * | Tu | 13:02:15 | 13:03:25 | 06:25:18 | End Partial Solar | | -3.81 | -5.70 | 70.184 | 70.297 |
| 10/29/2022 | 07:35:51 | * | Sa | 14:35:51 | 14:37:01 | 07:59:16 | Lunar perigee 368291 km | | | | 70.184 | 70.303 |
| 10/31/2022 | 23:21:23 | * | M | 06:21:23 | 06:22:33 | 23:44:55 | Lunar illum. = 50% | | | | 70.184 | 70.307 |
| 10/31/2022 | 23:37:06 | * | M | 06:37:06 | 06:38:16 | 00:00:38 | 1Q Moon | | | | 70.184 | 70.307 |
| 11/08/2022 | 01:02:30 | | Tu | 08:02:30 | 08:03:40 | 01:25:54 | P1-First contact Lunar | h | -57.08 | 55.55 | 70.184 | 70.318 |

| Date (MST) | Time (MST) | DST | DoW | UT1 | TT | Solar Time JMLC | Event | LV | Sun elev. JMLC | Moon elev. JMLC | DUTC (sec) | DUT1 (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/08/2022 | 02:05:55 | | Tu | 09:05:55 | 09:07:05 | 02:29:19 | P2-Total Penumbral Lunar | f | -48.28 | 46.92 | 70.184 | 70.319 |
| 11/08/2022 | 02:08:52 | | Tu | 09:08:52 | 09:10:02 | 02:32:16 | U1-begin umbral Lunar | P | -47.81 | 46.47 | 70.184 | 70.319 |
| 11/08/2022 | 03:16:13 | | Tu | 10:16:13 | 10:17:23 | 03:39:37 | U2-begin total Lunar | T | -36.52 | 35.52 | 70.184 | 70.319 |
| 11/08/2022 | 03:59:11 | | Tu | 10:59:11 | 11:00:21 | 04:22:35 | TOTAL LUNAR MID-POINT | T | -28.91 | 28.17 | 70.184 | 70.319 |
| 11/08/2022 | 03:59:12 | | Tu | 10:59:12 | 11:00:22 | 04:22:36 | Lunar-Solar max. angle 179.76 deg. | | | | 70.184 | 70.319 |
| 11/08/2022 | 04:02:08 | | Tu | 11:02:08 | 11:03:18 | 04:25:32 | Full Moon at 390660 km | | | | 70.184 | 70.319 |
| 11/08/2022 | 04:42:07 | | Tu | 11:42:06 | 11:43:17 | 05:05:30 | U3-Totality ends | P | -21.22 | 20.77 | 70.184 | 70.319 |
| 11/08/2022 | 05:49:27 | | Tu | 12:49:27 | 12:50:37 | 06:12:51 | U4-Outside umbra | f | -9.34 | 9.36 | 70.184 | 70.319 |
| 11/08/2022 | 05:52:30 | | Tu | 12:52:30 | 12:53:40 | 06:15:53 | P3-Leaving penumbra | h | -8.81 | 8.86 | 70.184 | 70.319 |
| 11/08/2022 | 06:55:58 | | Tu | 13:55:58 | 13:57:08 | 07:19:22 | P4-Last contact | | 2.23 | -0.89 | 70.184 | 70.319 |
| 11/08/2022 | 18:10:08 | | Tu | 01:10:08 | 01:11:19 | 18:33:30 | Uranus 3.8 arc-sec (5.6) appears closest 18.6872au | | | | 70.184 | 70.320 |
| 11/09/2022 | 01:25:48 | | W | 08:25:47 | 08:26:58 | 01:49:08 | Uranus at opposition - mag. 5.6 | | | | 70.184 | 70.320 |
| 11/13/2022 | 23:39:54 | | Su | 06:39:54 | 06:41:04 | 00:02:40 | Lunar apogee 404921 km | | | | 70.184 | 70.328 |
| 11/16/2022 | 06:27:03 | | W | 13:27:03 | 13:28:13 | 06:49:25 | LQ Moon | | | | 70.184 | 70.331 |
| 11/16/2022 | 06:47:27 | | W | 13:47:27 | 13:48:37 | 07:09:49 | Lunar illum. = 50% | | | | 70.184 | 70.331 |
| 11/19/2022 | 13:37:43 | | Sa | 20:37:43 | 20:38:54 | 13:59:25 | Mercury Aphelion 0.4666975 au | | | | 70.184 | 70.337 |
| 11/23/2022 | 15:40:51 | | W | 22:40:50 | 22:42:01 | 16:01:28 | Lunar-Solar min. angle 1.641 deg. | | | | 70.184 | 70.343 |
| 11/23/2022 | 15:57:13 | | W | 22:57:13 | 22:58:23 | 16:17:51 | New Moon (Lunation 1236) | | | | 70.184 | 70.343 |
| 11/25/2022 | 18:31:17 | | F | 01:31:17 | 01:32:27 | 18:51:17 | Lunar perigee 362826 km | | | | 70.184 | 70.346 |
| 11/30/2022 | 07:20:14 | | W | 14:20:14 | 14:21:24 | 07:38:42 | Lunar illum. = 50% | | | | 70.184 | 70.354 |
| 11/30/2022 | 07:36:32 | | W | 14:36:32 | 14:37:42 | 07:54:59 | 1Q Moon | | | | 70.184 | 70.354 |
| 11/30/2022 | 19:11:35 | | W | 02:11:35 | 02:12:45 | 19:29:51 | Mars 17.2 arc-sec (-1.8) appears closest 0.5444654au | | | | 70.184 | 70.354 |
| 12/07/2022 | 20:38:04 | | W | 03:38:04 | 03:39:14 | 20:53:30 | Lunar-Solar max. angle 177.187 deg. | | | | 70.184 | 70.366 |
| 12/07/2022 | 21:08:10 | | W | 04:08:09 | 04:09:20 | 21:23:35 | Full Moon at 400239 km | | | | 70.184 | 70.366 |
| 12/07/2022 | 21:14:14 | | W | 04:14:13 | 04:15:24 | 21:29:39 | Lunar occultation of Mars op = 77.779W 60.346N | | | | 70.184 | 70.366 |
| 12/07/2022 | 22:41:34 | | W | 05:41:34 | 05:42:44 | 22:56:58 | Mars at opposition - mag. -1.9 | | | | 70.184 | 70.366 |
| 12/11/2022 | 17:28:26 | | Su | 00:28:26 | 00:29:36 | 17:42:07 | Lunar apogee 405869 km | | | | 70.184 | 70.372 |
| 12/16/2022 | 01:56:05 | | F | 08:56:05 | 08:57:15 | 02:07:43 | LQ Moon | | | | 70.184 | 70.379 |
| 12/16/2022 | 02:15:39 | | F | 09:15:39 | 09:16:49 | 02:27:16 | Lunar illum. = 50% | | | | 70.184 | 70.379 |
| 12/21/2022 | 08:31:23 | | W | 15:31:23 | 15:32:34 | 08:40:25 | Mercury 6.7 arc-sec (-0.6) greatest separation 20.1 (E) | | | | 70.184 | 70.387 |
| 12/21/2022 | 14:48:11 | | W | 21:48:11 | 21:49:22 | 14:57:05 | DECEMBER SOLSTICE declination = -23.4381 | | | | 70.184 | 70.387 |
| 12/23/2022 | 02:52:07 | | F | 09:52:07 | 09:53:17 | 03:00:16 | Lunar-Solar min. angle 3.867 deg. | | | | 70.184 | 70.390 |
| 12/23/2022 | 03:16:52 | | F | 10:16:52 | 10:18:02 | 03:25:00 | New Moon (Lunation 1237) | | | | 70.184 | 70.390 |
| 12/24/2022 | 01:26:49 | | Sa | 08:26:49 | 08:28:00 | 01:34:30 | Lunar perigee 358270 km | | | | 70.184 | 70.391 |
| 12/24/2022 | 08:20:36 | | Sa | 15:20:36 | 15:21:46 | 08:28:08 | Mercury approx. dichotomy | | | | 70.184 | 70.392 |
| 12/25/2022 | 20:08:47 | | Su | 03:08:47 | 03:09:57 | 20:15:34 | Venus Aphelion 0.7282212 au | | | | 70.184 | 70.394 |
| 12/29/2022 | 18:03:18 | | Th | 01:03:18 | 01:04:28 | 18:08:11 | Lunar illum. = 50% | | | | 70.184 | 70.400 |
| 12/29/2022 | 18:20:32 | | Th | 01:20:32 | 01:21:42 | 18:25:24 | 1Q Moon | | | | 70.184 | 70.400 |
| 01/22/2023 | 12:36:25 | | Su | 19:36:24 | 19:37:35 | 12:31:59 | Conjunction (RA) of Venus and Saturn | | | | 70.184 | 70.438 |

The date and time at the left of each line are in MST in every case.
An asterisk is shown at the right of the time when daylight savings
time is in effect and one hour is to be added to the time.

Note: Although perigee/apogee/perihelion/aphelion and closest
are tabulated to the nearest second - the distance computed for
any one of these events changes slowly and the calculation of the
distance is not accurate enough to pinpoint the time to one-second
accuracy. Also- these events cannot be determined directly by
telescopic observation.

For lunar occultations the time listed is the time when the
geocentric angle between the object and the Moon is minimal.
The geographic location (op) is given for the point on the Earth's
surface where the center of Moon's shadow strikes - or where that
line is closest to the surface.

Note: The column DUT1 is calculated using formulas approximating
past values of DUT1 for dates prior to 1972.
For dates after 1971 (until the date of the table) interpolation of tabulated monthly values is used.
For future dates all values of DUT1 are predictions.
The column DUTC lists exact values for past dates after 1971.
Future values of DUTC are based on the predicted values of DUT1.

almanac6.py ver 190420 + gglib version 190414a
(DUT1 and DUTC data current on 04/18/2019).